Vol. 1065 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

April 22, 1986

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

April 22, 1986 Volume 1065 Number 4

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Feb. 9, 1986	750.00
if paid on or after Feb. 9, 1986	830.00
International fees	
Basic fee (first 30 pages):	
if paid before Jan. 1, 1986	280.00
if paid on or after Jan. 1, 1986	325.00
Basic Supplemental fee (for each page over 30):	
if paid before Jan. 1, 1986	6.00
if paid on or after Jan. 1, 1986	6.00
Designation fee for the first 10 national or regional offices:	
if paid before Jan. 1, 1986	70.00
if paid on or after Jan. 1, 1986	80.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Dec. 17, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 19, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,380,090 through 4,380,832
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anni-

versary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 2, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,313,456	06/219,595	2/02/82
4,313,842	06/239,049	2/02/82
4,313,857	06/257,126	2/02/82
4,313,975	06/225,711	2/02/82
4,314,034	06/220,563	2/02/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,253,956, Re. S.N. 834,314, Filed Feb. 27, 1986, Cl. 210/188, APPARATUS FOR THE ANAEROBIC PURIFICATION OF WASTE WATER, Kees C. Pette, Owner of Record: *Gist-Brocades N.V., Delft, The Netherlands,* Attorney or Agent: Ralph E. Bucknam, et al., Ex. Gp.: 136

4,481,219, Re. S.N. 817,286, Filed Jan. 9, 1986, Cl. 514/456, INHIBITION OF GROWTH IN FUNGI, Sarah Caroline Watkinson, Owner of Record: *National Research Development Corp., London, England,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 125

4,545,547, Re. S.N. 830,214, Filed Feb. 18, 1986, Cl. 242/131, CREEL COMPONENT AND CREEL CONSISTING OF SEVERAL COMPONENTS, Hans S. Singer, Owner of Record: *Hans S. Singer Co., Inc., Greenville, S.C.,* Attorney or Agent: John B. Hardaway, III, Ex. Gp.: 245

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 22, 1986

Re. 32,048	4,532,820	4,551,061	4,559,601
4,134,220	4,532,923	4,551,277	4,560,937
4,217,377	4,533,825	4,551,884	4,561,059
4,254,193	4,535,323	4,552,050	4,561,216
4,381,868	4,536,041	4,552,680	4,561,326
4,397,718	4,536,761	4,552,948	4,561,366
4,417,178	4,536,777	4,553,100	4,561,470
4,436,004	4,537,016	4,553,165	4,561,742
4,447,003	4,538,719	4,553,563	4,561,751
4,449,087	4,540,622	4,554,324	4,562,419
4,451,085	4,541,729	4,554,394	4,562,474
4,467,464	4,541,801	4,554,555	4,563,233
4,469,649	4,542,335	4,554,814	4,563,267
4,473,743	4,543,645	4,554,936	4,563,454
4,476,334	4,543,952	4,555,557	4,563,649
4,485,117	4,544,291	4,555,566	4,564,474
4,494,989	4,544,742	4,555,682	4,565,343
4,500,909	4,544,894	4,555,803	4,565,571
4,505,092	4,545,084	4,555,880	4,565,961
4,511,242	4,547,289	4,555,890	4,566,220
4,516,600	4,548,366	4,556,727	4,566,259
4,518,397	4,548,383	4,557,168	4,566,320
4,518,860	4,548,752	4,557,597	4,566,622
4,521,082	4,549,100	4,557,773	4,566,943
4,524,725	4,549,929	4,557,917	4,567,620
4,525,144	4,549,980	4,558,280	4,568,122
4,529,543	4,550,022	4,558,398	4,568,136
4,530,795	4,550,365	4,558,704	4,568,437
4,531,451	4,550,471	4,559,569	4,568,596
4,532,291	4,550,617	4,559,597	4,569,958

Disclaimers

4,259,779.—*Alfred C. Ipri,* Princeton and *Doris W. Flatley,* Belle Mead, N.J. METHOD OF MAKING RADIATION RESISTANT MOS TRANSISTOR. Patent dated Apr. 7, 1981. Disclaimer filed Dec. 16, 1985, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to the remaining term of said patent.

4,408,053.—*Joseph T. Strupczewski,* Flemington, N.J.; *Beth A. Gardner,* San Jose, Calif.; and *Richard C. Allen,* Flemington, N.J. (4-PIPERIDYL)-SUBSTITUTED PHENYL KETONES. Patent dated Oct. 4, 1983. Disclaimer filed Feb. 10, 1986, by the assignee, *Hoechst-Roussel Pharmaceuticals, Inc.*

Hereby enters this disclaimer to claims 1 to 16 of said patent.

Disclaimer and Dedication

3,520,186.—*George L. Adams,* Bay Shore, and *Irwin S. Landow,* East Meadow, N.Y. ULTRASONIC FLUID INTERFACE SENSING. Patent dated July 14, 1970. Disclaimer and Dedication filed Feb. 19, 1986, by the assignee, *National Sonics Corp.*

Hereby disclaims and dedicates to the Public claims 2 and 13 through 15 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 15, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-18-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-17-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	9-28-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	10-11-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	8-01-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-25-84
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-01-85

Expiration of patents: The patents within the range of numbers indicated below expire during March 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,430,260 to 3,435,459, inclusive

Plant Patents ..... Numbers 2,870 to 2,875 inclusive

REEXAMINATIONS

APRIL 22, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 28,176 (489th)
BRACKET FOR MOUNTING BOAT ACCESSORY
George F. Horton, Rte. 2, Box 718, Fort Worth, Tex. 76135
Reexamination Request Nos. 90/000,034, Jul. 27, 1981 and 90/000,202, May 21, 1982.
Reexamination Certificate for Reissue Patent Re. 28,176, issued Oct. 1, 1974, Ser. No. 401,812, Sep. 28, 1973.
Original No. 3,674,228, dated Jul. 4, 1972, Ser. No. 54,819, Jul. 14, 1970.
Int. Cl.[4] F16M *1/00*; B63H *5/12*
U.S. Cl. 248—642

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

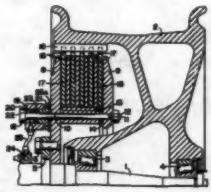
The patentability of claims **3, 6, 7, 10** and **11** is confirmed.

Claims **1, 2, 4, 5, 8** and **9** are cancelled.

New claims **12–50** are added and determined to be patentable.

[1. Apparatus for mounting a motor to a boat for movement between an extended position and a retracted position, said motor being of the type having propeller means coupled to one end of an elongated member, said apparatus comprising:
mounting means including base means adapted to be secured to the deck of a boat,
first and second arm means having first ends pivotally connected to said mounting means at spaced positions for pivotal movement about first and second spaced pivot axes respectively above said base means to allow movement of the other ends of said arm means between extended and retracted positions,
said first pivot axis to be located inward of said second pivot axis when said mountaing means is secured in place,
said first pivot axis being located at a distance above said base means which is at least the same distance between said second pivot axis and said base means,
said second arm means having a length less than the length of said first arm means, and
support means for holding the other end of said elongated member,
said support means being pivotally coupled to the other ends of said first and second arm means at spaced pivot positions for pivotal movement about third and fourth spaced pivot axes respectively to support the motor in an operating position with its propeller in the water when said first and second arm means are in their extended position and to support the motor out of the water when said first and second arm means are in their retracted position,
said third pivot axis being formed between said support means and the other end of said first arm means,
said fourth pivot axis being formed between said support means and the other end of said second arm means,
the distance between said first and third pivot axes being greater than the distance between said second and fourth pivot axes and the distance between said third and fourth pivot axes being greater than the distance between said first and second pivot axes.]

B1 3,650,357 (490th)
DISC BRAKE WITH HOMOGENEOUS BRAKE STACK
John P. Nelson; Joseph F. Dernovshek; Hal E. Miller, all of Akron, and Clifton A. Byers, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Reexamination Request No. 90/000,646, Oct. 10, 1984.
Reexamination Certificate for Patent No. 3,650,357, issued Mar. 21, 1972, Ser. No. 833,836, May 8, 1969.
Continuation-in-part of Ser. No. 739,836, Jun. 25, 1968, abandoned.
Int. Cl.[4] F16D *55/36, 69/00, 13/52*; B25G *3/28*
U.S. Cl. 188—71.5



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **9** and **10** are cancelled.

Claims **1–6, 11,** and **14–20** are determined to be patentable as amended.

Claims **7, 8, 12** and **13** dependent on an amended claim, are determined to be patentable.

New claims **21–26** are added and determined to be patentable.

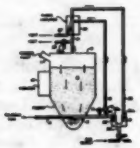
1. [A] *An aircraft* disc brake which comprises[;]:
a rotatable body, a fixed axle *on an aircraft* rotatably supporting the body,
a stack of discs in the earth's atmosphere each having portions splined in aligned alternating relation respectively to the axle and the body, each disc characterized by being made from a carbon base material having low weight, high specific heat, and low thermal expansion properties, and having a friction coefficient of at least 0.10 between adjacent discs over the normal operating temperature range thereof, and
reinforcing means strengthening the splined portion of each disc so that each disc is capable of transmitting torque regardless of the direction of rotation of the disc[.],
whereby said aircraft disc brake is capable of braking an aircraft.

B1 3,976,332 (491st)

POWDER FEED DEVICE FOR FLAME SPRAY GUNS

Arthur J. Fabel, Westbury, N.Y., assignor to Metco, Inc., Westbury, N.Y.

Reexamination Request No. 90/000,649, Oct. 12, 1984.
Reexamination Certificate for Patent No. 3,976,332, issued Aug. 24, 1976, Ser. No. 218,888, Jan. 19, 1972.
Continuation of Ser. No. 836,929, Jun. 26, 1969, abandoned.
Int. Cl.[4] B65G *53/40*
U.S. Cl. 406—14



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 2 and 4–7 are determined to be patentable as amended.

Claims 3, 8 and 9, dependent on an amended claim, are determined to be patentable.

1. A powder feeding system for a flame spray gun comprising:

a. an enclosed hopper containing a powder to be flame sprayed in loose particulate form;

[b. a gas conduit connected to a carrier gas supply and extending to a point of powder carrier gas utilization; c. A powder intake conduit connected to said gas conduit at a point between said gas supply and said point of utilization and extending into said hopper below the level of said powder and having a geometric design and arrangement such that there is no gravity flow of the powder therethrough into a carrier gas stream in said gas conduit in the absence of a fludizing gas flow therethrough;]

b. gas conduit means for entraining said powder in a carrier gas comprising a tubular member having in its wall a powder intake orifice disposed below the level of said powder, said tubular member having an inlet end connected to a source of said carrier gas, and said gas conduit means having a geometric design and arrangement such that there is no flow of said powder into said tubular member through said orifice in the absence of a flow of pressurized fluidizing gas through said orifice;

c. outlet means connected to an outlet end of said tubular member for transporting said entrained powder in said carrier gas from said tubular member to a point of utilization;

d. a fluidizing gas conduit adapted to discharge a regulated amount of *pressurized* fluidizing gas [under pressure] into said hopper at a point remote from the fluidized zone referred to in ([c]*f*);

e. said hopper being adapted to cause the fluidizing gas to pass through the powder therein and converge towards said intake [conduit] *orifice* and fluidize the powder in the immediate vicinity thereof; and

f. a fluidized zone of said powder in said hopper in the immediate vicinity of said powder intake [conduit] *orifice*, the powder surrounding the fluidized zone being non-fluidized and acting as a diffusing region for introducing fluidized gas uniformly into said fluidized zone.

B1 4,228,113 (492nd)

PROCESS FOR MAKING OBJECTS FROM MINERAL FILLERS BONDED WITH A THERMOSETTING RESIN

Rene L. E. van Gasse, Opglabbeek, Belgium, assignor to Stamicarbon, B.V., Geleen, Netherlands

Reexamination Request No. 90/000,798, Jun. 13, 1985.
Reexamination Certificate for Patent No. 4,228,113, issued Oct. 14, 1980, Ser. No. 956,042, Oct. 31, 1978.
Claims priority, application Netherlands, Nov. 3, 1977, 7712108; Dec. 28, 1977, 7714465
Int. Cl.[4] B29D *3/02*
U.S. Cl. 264—24

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–13 is confirmed.

New claim 14 is added and determined to be patentable.

1. In a process for moulding three-dimensionally shaped article from a molding material including the steps of

(1) forming a pliable sheet of molding material composed of a thermosetting resin, a hardener of said thermosetting resin and mineral fillers;

(2) transferring the thus formed sheet in a pliable condition to a mold; and

(3) subjecting the sheet to pressure at an elevated temperature to form a three-dimensionally shaped article,

the improvement wherein prior to step (2)

(a) at least a portion of the wall of the mold, under conditions of elevated temperature, is provided with at least one layer of a mixture of a powdery thermosetting resin and a catalyst for said resin,

(b) the applied resin of step (a) is allowed to melt and is polymerized at said elevated temperature, and

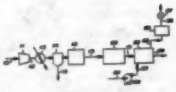
(c) the pliable sheet is inserted into the thus coated mold and subjected to pressure according to steps (2) and (3).

B1 4,352,740 (493rd)

WATER OZONATION METHOD

Ronald J. Grader, East Amherst, and Richard P. Johansen, Williamsville, both of N.Y., assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Reexamination Request No. 90/000,711, Jan. 16, 1985.
Reexamination Certificate for Patent No. 4,352,740, issued Oct. 5, 1982, Ser. No. 119,671, Feb. 8, 1980.
Int. Cl.[4] C02F *1/78*
U.S. Cl. 210—760



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–4 is confirmed.

Claim 5 is determined to be patentable as amended.

New claims 6–22 are added and determined to be patentable.

1. In a method for ozonation of a water stream by separating air to produce oxygen-enriched feed gas, generating ozone in said feed gas by silent electric discharge to provide ozone-con-

taining feed gas, contacting said water stream and said ozone-containing feed gas to dissolve ozone and oxygen in said water stream, atmospherically venting ozone-depleted gas from said contacting, and discharging the ozonized and oxygenated water from said contacting; the improvement comprising:

(a) producing at least 70% oxygen by volume as said oxygen-enriched feed gas;

(b) generating between 4% and 8% by weight ozone in said silent electric discharge such that the figure of merit η, representing the ozone generation energy demand in kwh/lb-O_3, is less than that defined by the equation:

$$=1/(0.34-0.033x)$$

wherein x is the ozone weight % concentration in the so-generated ozone-containing feed gas; and

(c) performing said contacting of said water stream and said ozone-containing feed gas to dissolve between 0.5 ppm and 8 ppm ozone in said water stream.

REISSUES

APRIL 22, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

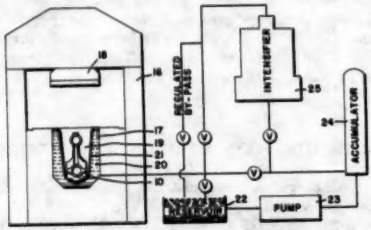
Re. 32,117
FORGING PROCESS

Elbert K. Weaver, Westboro, Mass., assignor to Wyman-Gordon Company, Grafton, Mass.

Original No. 4,094,053, dated Jun. 13, 1978, Ser. No. 688,620, May 21, 1976. Continuation of Ser. No. 98,627, Nov. 29, 1979, abandoned. Application for reissue Nov. 16, 1981, Ser. No. 321,379

Int. Cl.⁴ B23P *17/00*; B22F *3/24*

U.S. Cl. 29—423 **6 Claims**



4. A process for forming a workpiece of a predetermined shape from powdered metal, comprising the steps of:

(a) forming a semi-rigid liner of heat-decomposible material having generally the said shape,

(b) adding a quantity of said powdered metal into the liner,

(c) inserting the liner and contents into the open end of an elastomeric liquid-impervious bag which forms part of an isostatic press provided with means for sealing the open end of the bag,

(d) sealing the open end of the bag,

(e) isostatically compacting the bag against the liner so that the bag completely envelops the liner to compact the powdered metal in the liner,

(f) removing the liner and contents from the bag,

(g) heating the liner and contents to cause decomposition of the liner and sintering the contents to form a rough workpiece, and

(h) forging the rough workpiece.

Re. 32,118
BOAT HOIST

Byron L. Godbersen, 710 Circle Dr., Ida Grove, Iowa 51445

Original No. 4,401,335, dated Aug. 30, 1983, Ser. No. 268,359, May 29, 1981. Application for reissue Nov. 19, 1984, Ser. No. 672,918

Int. Cl.⁴ B25J *7/00*

U.S. Cl. 187—1 R **10 Claims**

12. A boat hoist, comprising:

a vertical frame;

a horizontally disposed platform attached to said frame, said platform being movable in a vertical direction between a lowered position and a raised position;

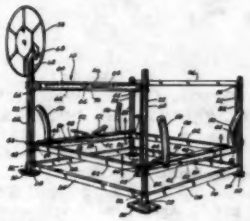
means for exerting an upwardly directed force at a first point on said movable platform; and

means for transmitting said upwardly directed force to a second point on said movable platform remote from said first point, wherein said upwardly directed force is evenly distributed between said first point and said second remote point, to raise the platform in a level manner;

wherein said force transmitting means includes:

a flexible cable having a predetermined length;

said flexible cable including a first end secured to said frame at a location below said first point on said movable platform and below said lowered position of said platform, and a second end secured to said frame at a location above said second remote point on said movable platform and above said raised position of said platform;



said flexible cable being disposed in slideable contacting relationship over a first member of said platform located adjacent said first point, and under a second member of said platform located adjacent said second remote point.

Re. 32,119
MOORING AND SUPPORTING APPARATUS AND METHODS FOR A GUYED MARINE STRUCTURE

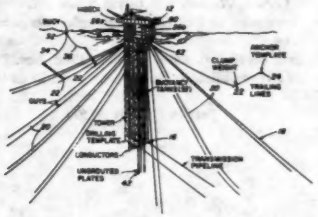
Philip A. Abbott; James E. Dailey; Demir I. Karsan, and Andrea Mangiavacchi, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Original No. 4,417,831, dated Nov. 29, 1983, Ser. No. 257,391, Apr. 24, 1981. Application for reissue Jul. 22, 1985, Ser. No. 757,603

Claims priority, application United Kingdom, Apr. 30, 1980, 8014621

Int. Cl.⁴ E02B *17/00*

U.S. Cl. 405—227 **18 Claims**



2. In a [guyed] marine structure having

a substantially upright structural member, said member extending from the bottom of a body of water to a position above the surface of said body of water,

[a lateral support means connected to said member near said water surface for providing lateral support for said member against forces tending to move the member in a lateral direction,] and

a load supporting foundation connected to support at least a portion of the weight of said member,

the improvement wherein said load supporting foundation comprises

a plurality of pile members in operative relation to said structural member having a predetermined penetration into the bottom surface of said body of water,

means for connecting said pile members to said structural member at an upper connection position near the top of said structural member,

said pile members being free of connection to said structural member below said connecting means,

whereby said pile members support axially the weight of said upper section of said structural member and provide the necessary compliancy to said structural member.

Re. 32,120

HYDROTREATING SUPERCRITICAL SOLVENT EXTRACTS IN THE PRESENCE OF ALKANE EXTRACTANTS

Jim Y. Low, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Original No. 4,397,736, dated Aug. 9, 1983, Ser. No. 249,804, Apr. 1, 1981. Application for reissue Jan. 20, 1984, Ser. No. 572,713

Int. Cl.⁴ C10G *1/04, 21/14*

U.S. Cl. 208—11 LE **10 Claims**

6. A process for recovering hydrocarbons from naturally-occurring low organic carbon content carbonaceous materials selected from oil shale, tar sand, and mixtures thereof comprising:

(a) subjecting the material to solvent extraction with an alkane-containing solvent under supercritical conditions for the solvent,

(b) then hydrotreating the extract from step (a) with added hydrogen in the presence of the solvent, and

(c) recovering the resultant hydrotreated product.

Re. 32,121

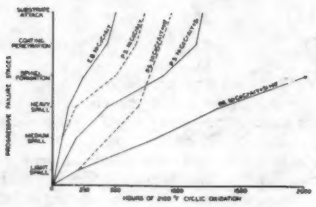
OVERLAY COATINGS FOR SUPERALLOYS

Dinesh K. Gupta, Vernon, and David S. Duvall, Cobalt, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Original No. 4,419,416, dated Dec. 6, 1983, Ser. No. 289,952, Aug. 5, 1981. Application for reissue Apr. 24, 1984, Ser. No. 616,506

Int. Cl.⁴ B32B *15/00*

U.S. Cl. 428—656 **6 Claims**



1. A gas turbine engine component which comprises a substrate selected from the group consisting of Ni and Co base superalloys having thereon a protective coating consisting essentially of 5–40% Cr, 8–35% Al, 0.1–2.0% Y, [1–7.0%] *0.1–7%* Si and 0.1–2.0% Hf balance selected from the group consisting of Ni, Co and mixtures thereof.

Re. 32,122

4-SUBSTITUTED 3,3-DIMETHYL-BUTAN-2-ONES, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS INTERMEDIATE PRODUCTS

Wolfgang Krämer, and Hans-Ludwig Elbe, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Original No. 4,371,708, dated Feb. 1, 1983, Ser. No. 265,269, May 20, 1981. Application for reissue May 18, 1984, Ser. No. 611,805

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 3021516

Int. Cl.⁴ C07C *49/163*

U.S. Cl. 568—308 **3 Claims**

9. A compound according to claim 8, in which

R^1 is optionally substituted phenyl, the or each substituent on the phenyl being selected from halogen, cyano, nitro, alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl part, alkyl and alkoxy with in either case 1 to 4 carbon atoms, dialkylamino with 1 to 2 carbon atoms in each alkyl part and phenyl which is itself optionally substituted by halogen.

Re. 32,123

DISCRIMINATORY HIT DETECTION IN TARGET APPARATUS

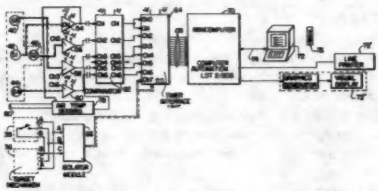
Lindsay C. Knight, Albury, Australia, assignor to Lomah Electronic Targetry, Inc., Boca Raton, Fla.

Original No. 4,349,729, dated Sep. 14, 1982, Ser. No. 110,356, Jan. 8, 1980. Application for reissue Aug. 27, 1984, Ser. No. 645,032

Claims priority, application United Kingdom, Jan. 8, 1979, 7900626; Mar. 8, 1979, 7908261; Apr. 4, 1979, 7911721; Australia, May 14, 1979, PD8800; United Kingdom, Jul. 24, 1979, 7925668

Int. Cl.⁴ G06F *15/20*; F41J *5/12*; G06F *15/72*

U.S. Cl. 235—400 **33 Claims**



20. A discriminatory hit detection apparatus for indicating when a target member has been hit by a projectile fired at said target member, comprising:

a target member;

transducer means spaced apart from and not physically connected to said target member for detecting and selectively providing a hit indication only in response to said projectile hitting or passing through said target member; and

means responsive to said transducer means output for providing said hit indication only in response to said projectile hitting or passing through said target member.

Re. 32,124

PREDICTIVE SIGNAL CODING WITH PARTITIONED QUANTIZATION

Bishnu S. Atal, New Providence, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Original No. 4,354,057, dated Oct. 12, 1982, Ser. No. 138,281, Apr. 8, 1980. Application for reissue Oct. 12, 1984, Ser. No. 660,494

Int. Cl.⁴ G10L *1/00*

U.S. Cl. 381—36 **10 Claims**

1. A predictive signal [communication] *processing* system

comprising means for analyzing an input signal in successive time intervals to generate a set of prediction signals for each interval;

means jointly responsive to the input signal and the interval prediction signals for producing a predictive residual signal;

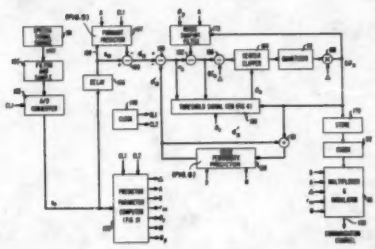
means for generating a quantized signal corresponding to said predictive residual signal;

and means for encoding said quantized signal;

characterized in that

said quantized signal generating means (**160, 164, 166, 111, 168**) comprises means (**160**) responsive to [said interval prediction signals,] said predictive residual signal and said quantized signal for producing an adaptively varying threshold level signal,

means (**164**) responsive to said adaptively varying threshold level signal for dividing said predictive residual signal into a first distinct portion below said threshold level signal and a second distinct portion at and above said threshold level signal, and



means (**111**) responsive to said first and second distinct portions for producing first and second sets respectively of quantized signals.

PLANT PATENTS

GRANTED APRIL 22, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,722

MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277, assignor to Sequoia Nursery, Visalia, Calif.

Filed Aug. 24, 1984, Ser. No. 644,017
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit substantially as illustrated and described, characterized by buds and flowers which are a blending of pink and white (sometimes with darker shading) with the reverse being white or near white, the buds and flowers resembling Beauty Secret (miniature—not patented) in shape but slightly larger in size; and further characterized by a plant which is vigorous and compact, easy to propagate from soft wood cuttings or by budding, with an abundance of flowers borne singly or several to the stem in loose clusters.

5,723

APPLE CULTIVAR NY 58533-1

Robert C. Lamb, and Herb S. Aldwinckle, both of Geneva, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,059
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—34 1 Claim

1. The new and distinct apple variety herein described and illustrated and identified by the characters enumerated above.

5,724

PLUM TREE, "SWEET HEART"

Jonathan P. Chakerian, 269 W. Sycamore, Reedley, Calif. 93654

Filed Nov. 21, 1984, Ser. No. 674,028
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—38 1 Claim

1. A new and distinct variety of plum tree substantially as illustrated and described, characterized by similarity in tree and fruit characteristics to the well known Casselman variety of plum tree but distinguished therefrom and characterized as to novelty by having larger leaves and producing larger fruit having smaller seeds, and thicker skins conducive to superior shipping and storage capabilities as compared with the Casselman Plum Tree.

5,725

AFRICAN VIOLET PLANT NAMED ARKANSAS

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to "Optimara", Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,721
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. An African violet plant named Arkansas, as described and illustrated, and particularly characterized by its exceptionally long lasting and non-dropping purple flowers, with 7–10 more flowers being carried on upright, wire-like flower stems curving to the center, vigorous growth habit, serrated dark green leaves with margins slightly waved and which are symmetrical out of the center of a plant, and by its full bouquet and profuse flowering.

5,726

AFRICAN VIOLET PLANT NAMED CORSAIRE

Arnold Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Co., Parrish, Fla.

Filed Jul. 18, 1984, Ser. No. 632,102
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Corsaire, as illustrated and described, and particularly characterized by its large, pale pink flowers with darker red-purple center, the flowers being borne in a cluster above dark green foliage, profuse and intermittent year round flowering.

5,727

FICUS PLANT

Jerry Soowal, 1900 N. Federal Hwy., Dania, Fla. 33004

Filed Mar. 26, 1984, Ser. No. 593,721
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of Ficus plant, substantially as herein shown and described, having leaves the color of its parent *Ficus microcarpa* but with a more ovate shape, and having a straighter trunk, a more symmetrical overall shape, and a trunk and main branches of a lighter grey color than that of *Ficus microcarpa*, and being more resistant to thrip infestation than the parent *Ficus microcarpa*.

PATENTS

GRANTED APR. 22, 1986

ERRATA

For CLASS	See PATENT NO.
148–001	4,583,608
558–264	4,584,142
558–240	4,584,143
558–250	4,584,144
558–406	4,584,145
558–156	4,584,146
514–018	4,584,284
514–019	4,584,285
525–177	4,584,335

PATENTS

GRANTED APRIL 22, 1986

GENERAL AND MECHANICAL

4,583,246
SCAVENGING APPARATUS FOR LIFE SUPPORT SUIT HELMET

Harrison R. Griswold, Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1983, Ser. No. 562,792
Int. Cl.[4] A61F *5/44*; A47B *3/00*; A62B *18/04*
U.S. Cl. 2—2.1 A **11 Claims**

1. Scavenging apparatus for the controlled containment of vomitus within the helmet of a life support suit, said apparatus being characterized by:

a normally contracted mask adapted for wear proximally to the chin of the user, said mask being expandable by inflation into registry with the mouth of the user and provided with a reservoir for the containment of said vomitus therewithin.

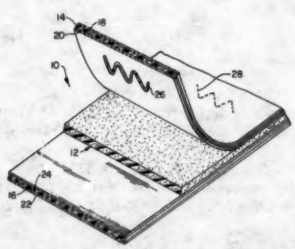
a conduit in fluid communication at an end thereof with the interior of said reservoir for applying suction thereto to minimize the risk of escape of said vomitus from said reservoir; and

a filter disposed in said reservoir for trapping said vomitus thereon to prevent fouling of said conduit by said vomitus.

4,583,247
GARMENT INCLUDING COMPOSITE INSULATION MATERIAL

Arthur L. Fingerhut, 1052 Elston Dr., Mountainside, N.J. 07092, and Howard W. Fingerhut, Edison, N.J., assignors to Arthur Larry Fingerhut, Mountainside, N.J.

Continuation-in-part of Ser. No. 348,224, Feb. 12, 1982, abandoned. This application May 11, 1983, Ser. No. 493,667
Int. Cl.[4] A41D *3/00*
U.S. Cl. 2—69 **17 Claims**



1. A heat insulating garment and the like for maximizing heat retention, comprising:

an outer fabric shell adapted to be disposed to cover a portion of the body of a wearer;

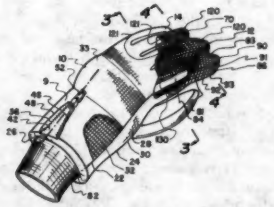
a composite interlining sheet material for said fabric shell, said composite interlining sheet material including (i) a substantially continuous internal layer of porous material having a low heat conductivity and high resiliency, said internal layer being of a substantially uniform thickness and consistency and having a composition and thickness such that it is supple and drapable, and said internal layer having first and second surfaces, and (ii) a continuous layer of flexible reflective material adhered to said first surface of said internal layer at at least spaced intervals, said reflective material providing a reflective surface facing away from said first surface of said internal layer to decrease the emissivity of said composite sheet material and reduce the conduction of heat in a direction away from said second surface of said internal layer toward said first surface of said internal layer; and

said composite interlining sheet material being disposed relative to said outer fabric shell in a manner (i) such that said continuous layer of reflective material faces and outer fabric shell and is between said outer fabric shell and said internal layer and (ii) such that the surface of said interlining sheet material facing said outer fabric shell is not bonded in complete physical contact with said outer fabric shell, whereby said continuous layer of reflective material will be disposed to face away from the body of the wearer when said outer fabric shell is disposed to cover a portion of the body of a wearer to thereby maximize heat retention.

4,583,248
INSULATED GLOVE

Joseph H. Edwards, 3455 Tree Farm La., Salt Lake City, Utah 84121, and Michael Carey, 5853 Lance St., San Diego, Calif. 92120

Filed Mar. 21, 1985, Ser. No. 714,962
Int. Cl.[4] A41D *19/00*
U.S. Cl. 2—164 **12 Claims**



12. An insulated ski glove for encasing the hand of a wearer comprising:

an outer shell formed to surround the hand, said outer shell having a top portion formed of fabric permeable to water vapor and impermeable to liquid water; and

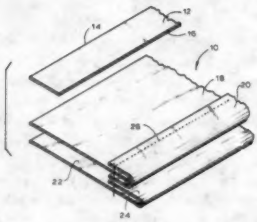
an inner lining formed to surround the hand and to fit within said outer shell, said inner lining being formed of fabric having a low thermal conductivity, a portion of said inner lining being permeable to liquid water and moisture.

4,583,249

WAISTBAND ASSEMBLY

Dattatraya V. Kamat, Yardley, and James R. Nabors, Horsham, both of Pa., assignors to Crown Textile Company, Jenkintown, Pa.

Filed Aug. 1, 1983, Ser. No. 518,895
Int. Cl.[4] A41D *1/14*
U.S. Cl. 2—220 **9 Claims**



1. A waistband assembly comprising:
an inwardly folded shell fabric of a garment;
a resilient, woven textile strip positioned within the fold of said shell fabric, said strip including a warp having a high thermoplastic content and comprising at least forty-five yarns per inch, a transverse fill including relatively stiff thermoplastic monofilament yarns, and at least one smooth edge positioned adjacent said fold;
said fill including about twenty-five picks per inch; and
said smooth edge being formed by the fusion of at least two yarns of said warp and said yarns of said fill of said strip, said fused edge of said strip being smooth and preventing said yarns of said fill from working their way out along said smooth edge.

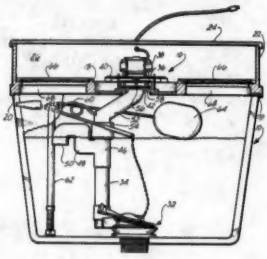
4,583,250

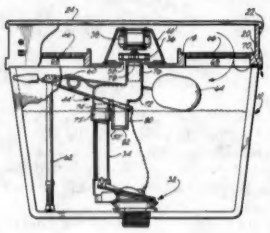
DEVICE FOR THE REMOVAL OF FOUL AIR FROM TOILET BOWLS

Bonifacio C. Valarao, 107 Park St., Apt. C, Alhambra, Calif. 91801

Continuation-in-part of Ser. No. 612,847, May 22, 1984, abandoned. This application Sep. 4, 1985, Ser. No. 772,326
Int. Cl.[4] E03D *9/04*
U.S. Cl. 4—213 **6 Claims**

1. A ventilation system for a toilet of the type having a bowl, with a rim, a water tank with a top, a passageway providing communication between the tank and bowl, valve means for opening and closing said passageway for flushing the water closet into a sewer pipe and an overflow pipe disposed in the tank to drain into said passageway and sewer pipe when the tank is overfilled, the system comprising:
a device disposed between the tank and cover, the device including a housing having a lower lip adapted to seal against the top of the tank and upstanding walls to sealingly support the tank top;
a barrier wall disposed in the housing defining in combination with the top a closed upper chamber, said barrier wall including an opening and said lower lip including at least one aperture disposed beneath the barrier wall to provide communication between the tank and atmosphere;
means for adapting the overflow tube to extend to a position subadjacent said opening, the adapting means also defining in cooperation with the opening an annulus, said overflow communicating with said passageway;
a fan disposed in said chamber at said opening to draw foul air from said bowl and passageway through the overflow pipe and from the tank through said annulus and discharge the air to said chamber, said fan creating a pressure differential between said chamber and said tank;
filter means at said barrier wall to entrap odors, said pressure differential causing the air in the chamber to pass through the filter means for entrapment of odors and into said tank, a portion of the filtered air entering the tank discharged from the device at said aperture and the remainder recirculated to the annulus to combine with the foul air drawn from said overflow pipe.





4,583,251

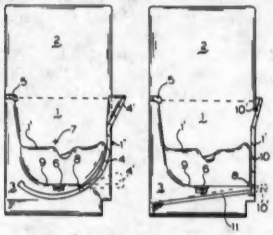
SEAT BATH UNIT

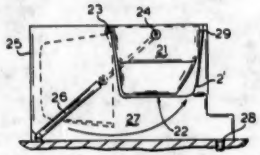
Fürst Karl, Reinprechtsdorferstrasse 23/11, 1050 Vienna, and Lambert Kröll, Döblinger Gürtel 15/3, 1190 Vienna, both of Austria

Filed Nov. 15, 1983, Ser. No. 551,877
Claims priority, application Austria, Nov. 15, 1982, 4153/82; Feb. 18, 1983, 564/83; May 20, 1983, 1862/83; May 20, 1983, 1863/83
Int. Cl.[4] A47K *3/02*
U.S. Cl. 4—555 **16 Claims**

1. A seat bath unit for elderly, frail, or otherwise handicapped persons, comprising:
a bathtub having a seat part, a floor, and a sidewall which is displaceable for complete opening up of the seat part, said sidewall having a cross-sectional shape in the form of a circular arc and being movable downwards beneath the

floor of the bathtub in lateral guides running in circular arcuate form reaching beneath the bathtub floor; and





a catchment trough beneath the bathtub for receiving the total amount of bath water from the bathtub.

4,583,252

SPONGE BATH AND RINSE PLATFORM

William A. McCourt, 3936 Ireland St., Sacramento, Calif. 95821

Continuation-in-part of Ser. No. 618,209, Jun. 7, 1984, abandoned. This application Feb. 26, 1985, Ser. No. 705,814

Int. Cl.[4] A47K *3/02*

U.S. Cl. 4—584 **11 Claims**

1. A sponge bath and rinse platform formed as an integral one-piece rigid structure for supporting a user, formed with a generally sloping bottom including raised portions defining:

head support means for supporting the user's head;

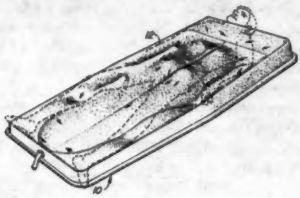
lower trunk support means, located to confront the user at about waist level, for supporting the user's lower back and buttocks above said sloping bottom;

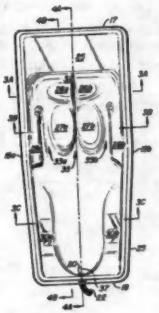
arm support means for supporting the user's arms away from the user's trunk; and

leg support means for supporting the user's legs in a spread-apart position;

wherein the platform is configured to provide drainage past said arm support means to a collection area;

whereupon when the user's head is on said head support means, the user's arms on said arm support means, the user's lower back and buttocks on said lower trunk support means, and the user's legs on said leg support means, the user is in a position with the user's armpit and groin areas maintained above said sloping bottom and freely accessible for cleansing with said sloping bottom providing adequate drainage for rinse liquid used in such cleansing.





4,583,253

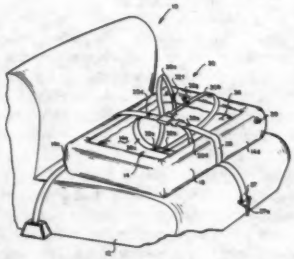
BABY SLEEPER FOR AUTOMOBILES

Dennis E. Hall, 18001 Cantara St., Reseda, Calif. 91335

Filed Feb. 15, 1985, Ser. No. 701,989

Int. Cl.[4] A47D *7/04;* **A47C** *27/08*

U.S. Cl. 5—94 **8 Claims**



1. A baby sleeper, mountable on an automobile seat in con-

junction with an existing standard seat belt buckle arrangement, comprising in combination:

(a) a four-sided base, having an upper surface, an underside and merging edges, which are rolled upwardly and heat sealed airtight to and surrounding the base, so as to form a tubular inflatable walled enclosure for placing the baby therewithin;

(b) an air inflator valve mounted on the tubular enclosure for inflating thereof;

(c) a first, second and third strap, heat sealed parallel spatially apart from one another onto the underside of the base, each strap terminating in a loop, respectively projecting from a first side of the base, within which the existing seat belt buckle arrangement passes and interlocks, the second strap, at least portion of which is resilient, extending beyond a second opposite side of the base terminating in a hook, attachable to the automobile seat;

(d) a fourth strap, wrapped over the upper surface and resting on opposite sides of the tubular enclosure of the base in alignment with and having its ends heat sealed at least to the second straps;

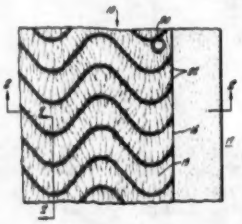
(e) harnessing means, mounted to the fourth strap for securing the arms, legs and torso of the baby.

4,583,254

LOW TENSION WATERBED MATTRESS WITH AESTHETIC APPEARANCE

John B. Johenning, 9724 Cataragus, Los Angeles, Calif. 90034, and Charles P. Hall, 5815 Bennett Valley Rd., Santa Rosa, Calif. 95404

Filed Mar. 19, 1984, Ser. No. 591,013
Int. Cl.[4] A47C *27/08*
U.S. Cl. 5—451 **18 Claims**



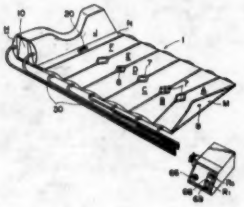
1. A waterbed mattress having a polymeric top wall providing a sleeping surface, a bottom wall, and side walls, the ratio of the surface area of the top wall when pulled taut to the surface area of the bottom wall when pulled taut being at least 1.05 and less than 1.2, the top wall having a plurality of expandable folds formed therein so that the top wall stretches when a user lays on the mattress, at least a portion of the folds being in a regular repeating pattern spaced apart from each other by a distance, L, of from about ¼ to about 3 inches, the ratio of the height of the regularly repeating folds to L being from about ¼ to about ½, the mattress capacity being at least 11 inches of water, and the mattress containing (i) water in an amount of at least 3 inches less than its capacity and (ii) a baffle for reducing wave motion in the mattress and for preventing bottoming of the top wall of the mattress when a user sits or lays on the mattress.

4,583,255

MASSAGE ARRANGEMENT OF THE PNEUMATIC TYPE

Tadahisa Mogaki; Mitsuma Matsumura; Nobuyuki Nozawa; Katsuji Kikuchi; Haruki Nakao, and Toshio Mikiya, all of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,136
Claims priority, application Japan, Mar. 5, 1983, 58-36163
Int. Cl.[4] A47C *27/08, 27/10*; A61H *1/00*
U.S. Cl. 5—453 **4 Claims**



1. A pneumatic massaging apparatus comprising:

a headrest member provided with a concave surface in its upper surface, said concave surface being symmetrical with respect to a central cross-sectional line of said headrest member;

a substantially rectangular-shaped mat body provided with a plurality of air chambers for massaging a user's waist and back regions and a massaging portion for massaging a user's shoulder, neck and occipital regions, each of said air chambers is sequentially disposed side by side with each other and extends in a width direction of said mat body to the extent that a width of each of said air chambers is longer than that of said user resting on said mat body with his face upward and is provided with a constricted portion in its middle portion in said width direction;

said massaging portion for massaging said user's shoulder, neck and occipital regions being constructed of, front and back air chambers covering front and back portions of said headrest member respectively, a non-air-chamber zone interposed between said front and back air chambers and covering said upper surface of said headrest member, and non-air-chamber zones having fixing means for fixing said headrest member to said mat body;

a compressed air source connected to said plurality of said air chambers of said mat body to sequentially individually supply and discharge the compressed air to and from said air chambers or selectively to supply and discharge the compressed air to and from specified ones of said air chambers only;

a distributing mechanism for distributing compressed air from said compressed air source and including a compressed air supplying/discharging mechanism provided with a rotary valve reversibly rotated by a motor;

a plurality of switches operatively positioned around said rotary valve for changing a rotational direction of said motor;

a keep relay and a keeper switch for controlling an electric power circuit for said keep relay; and

an electric power source circuit for said motor of said compressed air distributor;

said keep relay including a switch for maintaining a normal rotation of said motor, said switch being alternatively switched on/off by a switching action of said plurality of switches and a switch for a normal/reverse rotation of said motor;

whereby by operating said keeper switch said mat body performs as a whole a wave motion by sequential feeding and discharging of the compressed air into and from entire portions of said mat body, or said mat body performs a local wave motion by repeated feeding and discharging of

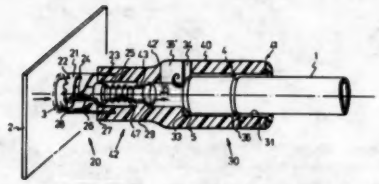
the compressed air into and from a certain portion of said mat body.

4,583,256

TOOL FOR CONNECTING A TUBE TO A LOCAL JUNCTION BOX

Hans Reichle, Wetzikon, Switzerland, assignor to Reichle + De Massari AG Elektro-Ingenieure, Wetzikon, Switzerland

Filed Jul. 5, 1984, Ser. No. 627,803
Claims priority, application Switzerland, Jul. 13, 1983, 3833/83
Int. Cl.[4] B26B *11/00*
U.S. Cl. 7—158 4 Claims



1. A tool for making a plug connection between a tube and a plastic box for electrical conductors, comprising:

an elongated handle-forming body;

means forming a cutting head at one end of said handle-forming body, said means forming said cutting head comprising a bore formed in said one end of said body and adapted to receive said tube, a first knife extending into said bore for cutting a chamfer on an end of said tube, and a second knife extending into said bore for cutting a barb-shaped rib in the periphery of said tube spaced from the chamfer; and

a bore head formed on an opposite end of said body, said bore head comprising a hollow steel cylinder anchored in and projecting from said opposite end of said body and formed with a cutting edge remote therefrom for cutting a hole in said box into which said end of said tube is insertable, a protective and centering plunger coaxial with said cylinder and axially shiftable relative to said cylinder, said plunger having an end received in said body, and a spring braced against said plunger and said body for normally biasing a free end of said plunger outwardly beyond said cutting edge, said plunger having a plunger plate on said free end adapted to bear against said box to position the tool for cutting said hole and being displaceable into said cylinder during cutting of said hole.

4,583,257

WELDING TORCH CLEANER FOR ROBOTIC WELDING

Edward W. Bridges, Springfields, and Charles R. Winterford, Putnoe, both of England, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Feb. 14, 1985, Ser. No. 701,832
Int. Cl.[4] B08B *9/00*
U.S. Cl. 15—93 R 2 Claims

1. An automatic welding torch cleaner, comprising:

a base;

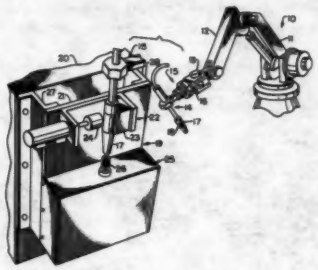
a relatively rigid cutter rotatably carried on said base;

means for rotating said cutter;

means for reversibly moving said cutter along its axis of rotation on said base between advanced and retracted positions;

means, mounted on said base, for linearly guiding said cutter while reversibly moving and for aligning said axis of rotation in a subtantially vertical attitude; and

means, mounted on said base above said cutter in its retracted position, for aligning a welding torch coaxially



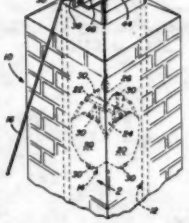
with said cutter and for clamping said welding torch stationarily on said base with respect to said cutter.

4,583,258

FLUE CLEANER AND MOUNTING ATTACHMENT

Roger W. Carroll, 1029 E. Prairie St., Jerseyville, Ill. 62052

Filed Jul. 11, 1984, Ser. No. 629,583
Int. Cl.[4] F23J *3/00*
U.S. Cl. 15—249 7 Claims



5. Flue scraping apparatus comprising a scraper head, a suspension cable for suspending the scraper head in a flue to be cleaned, and a mounting attachment for securing at the top of the flue, the mounting attachment including first and second pulleys for receiving the cable, and means positioning the first pulley substantially centrally over the flue, and the second pulley outside of the flue whereby the cable can be manipulated to move the scraper head up and down the flue from externally of a building of which the flue forms a part, wherein the scraper head comprises a box-like structure formed from peripheral scraper blades, and alignment blades for guiding the scraper head off of obstructions encountered in passage through the flue, the alignment blades being connected top and bottom to the respective scraper blades.

4,583,259

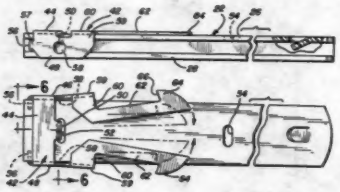
WIPER BLADE REFILL

Terry M. Will, Gary, Ind., assignor to The Anderson Company of Indiana, Michigan City, Ind.

Filed Dec. 17, 1984, Ser. No. 682,152
Int. Cl.[4] B60S *1/38*
U.S. Cl. 15—250.42 3 Claims

1. A windshield wiper refill having an elongate wiping element with first and second free ends and a backing member, the backing member having a body portion, a retention cham-

ber, first and second substantially co-planar flange pairs extending outwardly from said body portion, and first and second spaced, vertical webs each extending between the first and second flange pairs, the wiping element having a retention based seat in the retention chamber, the improvement compris-



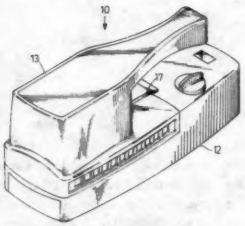
ing abutment means struck from at least one of the webs into the retention chamber at locations on the body portion spaced apart further than the length of the wiping elements for interfering with the ends of the wiping element to thereby restrict lengthwise movement of the wiping element relative to the backing member.

4,583,260

COMBINED VACUUM CLEANER AND STEAM IRON

Re Chin Zai, No. 8, Ho-Chiang Street, San-Ming District, Kaohsiung, Taiwan

Continuation-in-part of Ser. No. 620,514, Jun. 14, 1984, abandoned. This application May 13, 1985, Ser. No. 733,540
Int. Cl.[4] A47L *7/00*
U.S. Cl. 15—328 **6 Claims**



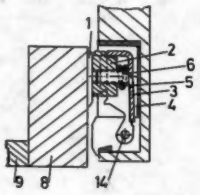
1. A combined vacuum cleaner and steam iron comprising a housing having a substantially flat bottom, said housing being provided with a chamber for containing water and another chamber for collecting dust, an electrical heating device mounted within said water chamber for heating the water contained in said water chamber, a casing connecting with said housing, a motor mounted within said casing, and a fan connected to a transmission shaft of said motor, said water chamber is provided with a passage which is communicated with a plurality of holes formed on the bottom of said housing whereby steam generated by heating the water contained in said water chamber can pass through said passage and discharge from said holes, said housing is further provided with a recess communicated with said dust-collecting chamber, which recess being provided for receiving said fan and being open at the lower end thereof, said fan is rotated by said motor and the rotation of said fan generates a suction force operable to draw air and dust through said lower open end of said recess into said dust-collecting chamber.

4,583,261

HINGE ASSEMBLY FOR CONNECTING A DOOR TO A FRAME OF A FURNITURE BODY

Erich Röck, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Oct. 20, 1982, Ser. No. 438,367
Claims priority, application Austria, Nov. 10, 1981, 4821/81
Int. Cl.[4] E05D *7/04*
U.S. Cl. 16—238 **4 Claims**



1. A hinge assembly for connecting a door to a frame of a furniture body, said hinge assembly comprising:

a hinge casing adapted to be inserted into a bore of a furniture door;

a hinge arm having a U-shaped profile and including a pair of spaced walls;

means for pivotally connecting said hinge arm to said hinge casing;

a mounting body adapted to be mounted on a furniture frame, said mounting body having extending therefrom projections defining with said body respective grooves;

an intermediate part separate from said hinge arm and having extending therefrom flanges slidably fittable into respective said grooves, whereby said intermediate part is adjustably mountable on said mounting body;

screw means for connecting said hinge arm to said intermediate part and for clamping said projections between said flanges of said intermediate part and said walls of said hinge arm; and

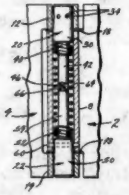
spring means positioned for urging said hinge arm away from said intermediate part upon loosening of said screw means to allow movement of said flanges within said grooves.

4,583,262

SPRING HINGE

Fred C. Werner, St. Louis County, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed Aug. 20, 1984, Ser. No. 642,095
Int. Cl.[4] E05F *1/08*
U.S. Cl. 16—300 **5 Claims**



1. A hinge comprising:

(a) a first leaf having spaced apart first and second knuckles provided with axially aligned bores of equal diameter which define a hinge axis;

(b) a second leaf having a knuckle located between the first and second knuckles of the first leaf and also having a bore which is equal in diameter to the bores of the first leaf and aligns axially with the bores of the first leaf;

(c) a unitary pivot extending through the bores of the knuckles for the first and second leaves and being capable of being installed in and removed from the bores as a unit, the pivot including:

(1) a first hinge pin element located in the bore of the first knuckle for the first leaf and in the bore of the knuckle for the second leaf and having a cylindrical portion at least within the bore of the knuckle for the second leaf and also having a threaded portion,

(2) a second hinge pin element located in the bore of the second knuckle for the first leaf and in the bore of the knuckle for the second leaf and including a cylindrical portion that is at least in the bore of the second knuckle for the first leaf and also having a threaded portion that is presented generally toward the threaded portion of the first hinge pin element,

(3) a spacer located between and being engaged and axially aligned with the hinge pin elements for preventing the hinge pin elements from moving axially together so as to establish a predetermined spacing between the cylindrical portions, and

(4) a coil-type torsion spring surrounding the spacer and being within the bore of the knuckle for the second leaf and at one end being threaded onto the threaded portion of the first hinge pin element and at its other end being threaded onto the threaded portion of the second hinge pin element such that the ends of the springs will not rotate relative to the pin elements onto which they are threaded, nor will they move axially off of the pin elements, the spring holding the two hinge pin elements together with the axial spacing between the pin elements when they are so held being substantially that established by the spacer so that the spacing between the pin element is substantially fixed at all times, the spring being small enough in diameter to slide through the bores of the knuckles, at least one of the hinge pin elements being no greater in diameter than the bores of the knuckles, so that when the pivot unit is not secured to any one of the knuckles, it may be moved as a unit axially through the bores and out of the knuckles; and

(d) first locking means for securing the first hinge pin element against rotation with respect to the first knuckle of the first leaf and second locking means for securing the second hinge pin element against rotation with respect to the knuckle of the second leaf, so that when the spring is twisted, the torque it exerts on the hinge pin elements will be transmitted to the leaves, at least one of the locking means including a securing element which extends transversely from the knuckle to the hinge pin element that it secures and is removable from the knuckle and hinge pin element, so that the two may be detached, the other locking means being arranged to, upon manipulation, detach the hinge pin element and knuckle with which it is associated, whereby the pivot may be driven as a unit from or driven as a unit into the aligned bores of the knuckles, and when so driven, will remain unitary and of a fixed length.

4,583,263

SKEWERING DEVICE

Thomas W. Wigley, Jr., 21959 Siegal Dr., Novi, Mich. 48050

Filed Oct. 2, 1984, Ser. No. 656,960
Int. Cl.[4] A22C *17/00*
U.S. Cl. 17—1 S **9 Claims**

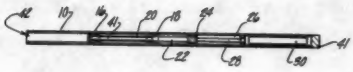
1. A skewering device comprising:

A. a frame structure defining a magazine adapted to receive a cartridge;

B. a cartridge for loading into said magazine having a size and shape conforming to said magazine and having means for receiving and holding food to be skewered therein;

C. means on said frame structure for guiding said cartridge into loaded position in said magazine;

D. means carried by said frame structure operative when actuated to pass a plurality of skewers, in parallel fashion,



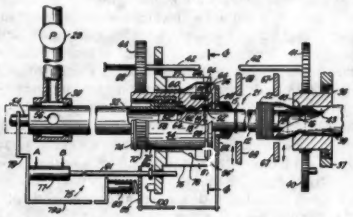
through the food held in said cartridge with the cartridge loaded into said magazine, whereafter said cartridge may be removed from said magazine and the skewered food removed from said cartridge for further processing.

4,583,264

STUFFING APPARATUS HAVING CASTING ARTICLE ENGAGING AND ROTATING MEANS

Joseph A. Nausedas, Oak Forest, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 29, 1983, Ser. No. 566,786
Int. Cl.[4] A22C *11/02*
U.S. Cl. 17—41 **29 Claims**



1. Stuffing apparatus for producing encased food products such as frankfurters and the like comprising:

(a) a conduit for food product including a discharge outlet;

(b) a rotatable chuck spaced forward from and axially aligned with said discharge outlet, said chuck having a central passage permitting the passage of an encased food product through said chuck;

(c) said discharge outlet and rotatable chuck being adapted to accomodate a casing article therebetween, the casing article including a substantially rigid tubular core having a fore end receivable in said rotatable chuck, an aft end receivable in said discharge outlet, a drivable part, and a shirred compacted casing disposed on the core for deshirring over the fore end of said core and through said rotatable chuck;

(d) said conduit being displaceable longitudinally forward towards said rotatable chuck and onto the aft end of a said tubular core held between said discharge outlet and rotatable chuck and said conduit including means for receiving and locating within said discharge outlet the aft end of a said tubular core responsive to the forward displacement of said discharge outlet;

(e) aft drive means displaceable with and rotatable about said discharge outlet and releaseably engagable with said drivable part on said tubular core when the aft end of a said core is received within said discharge outlet for rotating said core about its longitudinal axis; and

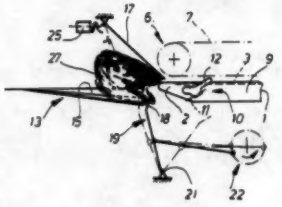
(f) means for rotating said chuck and said drive means at substantially the same speed.

4,583,265

DEVICE FOR PROCESSING FISH HEADS

Sigurdur Kristinsson, Saudarkrókur, Iceland, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. Kg, Lubeck, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,039
Claims priority, application Iceland, Jun. 16, 1983, 2818
Int. Cl.[4] A22C 25/14
U.S. Cl. 17—55 10 Claims



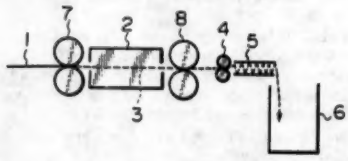
1. A device for processing fish heads defining a plane of symmetry, having at least jaw bones defining a lower jaw with a lower jaw arch and an isthmus in the rear end of the head, a pharynx and gills including gill covers and gill arches connected at said isthmus, especially for severing parts suitable for human consumption from parts unsuitable for this purpose from the fish head, said device comprising guide means having a spear-shaped end for receiving the fish heads in the direction of their plane of symmetry, means for conveying said fish heads along said guide means in a feeding direction defining a conveying path, feeding trough means arranged upstream of said guide means, and a cutting device associated to said guide means, wherein additional conveyor means are arranged between said feeding trough means and said spear-shaped end of said guide means and have at least one entraining element which is moveable out of a rest position directly adjacent to the end of said feeding trough means facing said spear-shaped guide end by grasping behind said lower jaw arch of said fish head in the direction towards said spear-shaped end and almost tangential to the lower flank of said guide means.

4,583,266

PROCESS FOR PREPARATION OF DISCONTINUOUS FILAMENT BUNDLES AND SHARP-ENDED FILAMENTS

Yasuo Tango, Fuji, and Makoto Kanazaki, Shizuoka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 427,214, Sep. 29, 1982, abandoned. This application Sep. 9, 1985, Ser. No. 774,852
Claims priority, application Japan, Oct. 5, 1981, 56-157420; Oct. 6, 1981, 56-158196; May 21, 1982, 57-86210
Int. Cl.[4] D01G 1/08
U.S. Cl. 19—0.39 1 Claim



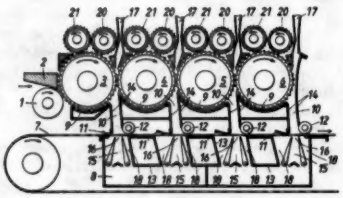
1. In a process for the preparation of discontinuous filament bundles composed of synthetic fibers by applying a drawing force or a drawing force and supplementary shearing force to a bundle of continuous filaments, the improvement which comprises feeding the bundle in the crimp-retained state, made of crimped acrylic type filaments, into a cooling zone maintained at a temperature from −20° C. to −195° C. before applying the drawing force, whereby the discontinuous filaments of the resisting bundle retain their crimp and the shrinkage is controlled.

4,583,267

APPARATUS FOR MAKING A FIBROUS WEB

Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria

Filed Jul. 5, 1985, Ser. No. 752,307
Claims priority, application Austria, Jul. 18, 1984, 2316/84; Sep. 11, 1984, 2903/84; Feb. 19, 1985, 482/85
Int. Cl.[4] D01G 15/26
U.S. Cl. 19—99 6 Claims



1. Apparatus for making a fibrous web comprising a feeder for receiving a feed web, a plurality of serrated carding drums rotating in the same sense at a surface speed which permits the fibers on the drums to fly from the latter under centrifugal force, and an air-permeable collecting surface, which is continually moved and from which air is sucked, and wherein fibers of the preliminary web fly from the carding drums in respective partial streams, which impinge on the collecting surface at points spaced apart in the direction of travel of the collecting surface, the carding drums are arranged one behind the other in the direction of movement of the feed web and are closely spaced apart, and each carding drum which succeeds another in the direction of travel of the feed web constitutes a worker roller associated with the preceding carding drum, characterized in that each of the closely succeeding carding drums has associated with it an additional worker roller and a clearer roller, which are disposed adjacent to that half of the periphery of the drum that is remote from the collecting surface.

4,583,268

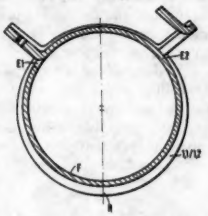
TUBE CLAMP

Heide Horcher born Klöss, Schöneck, Fed. Rep. of Germany, assignor to Willi Horcher, Schöneck, Fed. Rep. of Germany

PCT No. PCT/EP83/00081, § 371 Date Nov. 16, 1983, § 102(e) Date Nov. 16, 1983, PCT Pub. No. WO83/03456, PCT Pub. Date Oct. 13, 1983
Continuation of Ser. No. 557,175, Nov. 16, 1983, abandoned.
This PCT application Mar. 22, 1983, Ser. No. 762,025
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1982, 3210437
Int. Cl.[4] B65D 63/02
U.S. Cl. 24—20 R 1 Claim

1. A hose clamp having overlapping end portions from which holding members project in a generally radial direction, said clamp including a relatively wide pressure surface and being made from an elastic material to provide for a substantially uniform pressure over the entire said pressure surface, said pressure surface having, integral therewith, tension means, said tension means comprising a pair of rings of said material each bent from said pressure surface to extend substantially radially with the transition from said pressure surface to each ring being rounded and smooth, each said ring having a radial dimension that varies from a maximum at a selected point to a selected minimum which is adjacent said holding members,

said maximum being diametrically opposite to said minimum with said range being gradually reduced in their radial extent between said maximum and said minimum whereby the cross section of said clamp is varied from a maximum to a minimum.



4,583,269

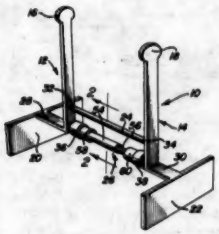
TOWEL RAIL CLAMP

John Harris, 11337 Terry, Detroit, Mich. 48227

Filed Aug. 23, 1984, Ser. No. 643,623

Int. Cl.[4] A44B *21/00*; A41F *1/00*

U.S. Cl. 24—495 **7 Claims**



1. A clamp for use in securing a towel against sliding off a towel rail over which the towel is draped, or the like, comprising a pair of opposed arm members having jaw-forming portions at one end and handle portions at the other end, a pivot bar interconnecting the arm members intermediate their ends, and a spring assembly interconnecting the arm members adjacent the pivot bar for urging the jaw-forming portions toward one another wherein the spring assembly comprises an elongate coil spring surrounded by tube means forming a stop limiting the extent to which the jaw-forming members are urged toward one another.

4,583,270

RASP HANDLE

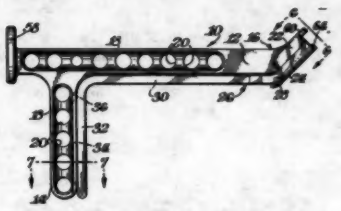
Robert V. Kenna, Hackensack, N.J., assignor to Pfizer Hospital Products Group, Inc., New York, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,368

Int. Cl.[4] B23D *71/04*

U.S. Cl. 29—80 **10 Claims**

1. A rasp handle having an elongate body portion with a pistol-type grip extending therefrom and rasp retaining means at the front end thereof, the rasp retaining means including a fixed jaw, a slide jaw constructed and arranged for sliding movement relative to the fixed jaw between a forward closed locking position where a rasp is locked between the jaws and a rearward open rasp receiving and releasing position, a lever connected to shift the slide jaw between its closed and open positions, and pivot means interconnecting the lever and the slide jaw whereby the lever is free to move between a position adjacent the body portion and a position away from the body portion.



4,583,271

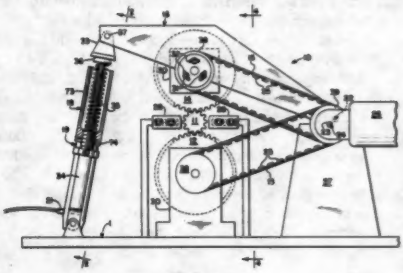
METHOD AND APPARATUS FOR BURNISHING SPLINES AND GEARS USING SYNCHRONOUSLY ROTATED GEARS

Walter C. Diener, Leyden Township, Cook County, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 28, 1983, Ser. No. 489,646

Int. Cl.[4] B24B *39/04*; B21H *5/02*

U.S. Cl. 29—90 B **9 Claims**



1. A burnishing apparatus comprising a pair of burnishing gears adapted to operatively engage teeth on generally diametrically opposite sides of a workpiece, the workpiece being unsupported other than by said gears during a burnishing operation, a first one of said gears being translationally fixed, a pivoting arm carrying the second one of said gears, and cylinder and piston connected to said arm for forcibly urging said gears toward each other and toward the workpiece, a rotating shaft with two belts for imparting simultaneous synchronized rotation to said gears at a velocity such that said workpiece is held translationally stationary while being rotated by said gears, means for holding the workpiece into engagement with said first one of said gears prior to engagement of the workpiece by said second of said gears, whereby pivoting of said arm causes generally epicyclic motion of said second gear teeth to facilitate its engagement with the workpiece.

6. A method of burnishing a toothed workpiece comprising:

(a) placing the workpiece between and along a line generally coincident with the centers of a pair of burnishing gears,

(b) holding the workpiece in engagement with one of said gears,

(c) moving the teeth of the other of said gears in a generally epicyclic path into engagement with the workpiece,

(d) supporting the workpiece only with said burnishing gears,

(e) applying compressive force to the workpiece with said gears,

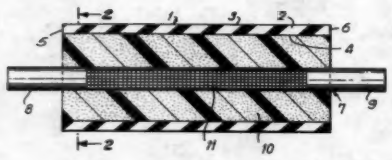
(f) synchronously rotating said gears such that each tooth of the workpiece contacts at least one of said gears.

4,583,272

PLATENS FOR PRINTERS

Joseph R. Keller, Fairfield, Conn., assignor to Alinabal Inc., Milford, Conn.

Filed May 13, 1982, Ser. No. 377,704
Int. Cl.[4] B21J 7/00
U.S. Cl. 29—110 5 Claims



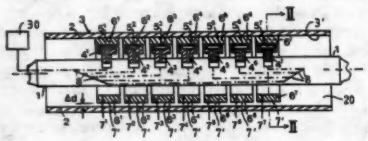
1. A platen for printers comprising:
(a) a resilient tubular sleeve having an outer cylindrical surface and;
(b) shaft means having exposed portions at the axial ends of the sleeve, said exposed shaft portions being concentrically aligned with the outer cylindrical surface of the sleeve, said shaft means comprising:
(1) first and second shafts extending partway into the core at each end of said tubular sleeve, and
(2) a center support member disposed within said core between the first and second shafts and having support ends engaging the first and second shafts; and
(c) a molded in place core disposed between and filling the space between the shaft means and the sleeve and connecting the shaft means and sleeve together in concentric relationship and against relative movement, said mold being constructed of moldable plastic material; and,
(d) the engagement between the first and second shafts and the center supporting member being a loosely spaced connection with the spacing there between filled by the molded in place core material.

4,583,273

CONTROLLED DEFLECTION ROLL

Eugen Schnyder, Ottenbach, and Heinz Güttinger, Schaffhausen, both of Switzerland, assignors to Sulzer-Escher Wyss Ltd., Zürich, Switzerland

Filed Aug. 29, 1984, Ser. No. 645,180
Claims priority, application Switzerland, Sep. 28, 1983, 5244/83
Int. Cl.[4] B21B 31/32
U.S. Cl. 29—113 AD 17 Claims



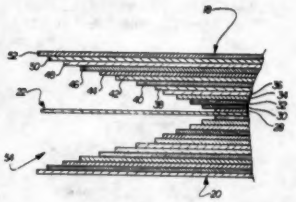
1. A controlled deflection roll comprising:
a stationary roll support member;
a roll shell mounted to rotate about said stationary roll support member;
said roll shell defining an interior space and having an inner roll shell diameter;
a predetermined number of support elements supporting said roll shell at said stationary roll support member;
a predetermined number of rotatable traveling rings arranged to said interior space defined by said roll shell;
each one of said predetermined number of rotatable traveling rings being operatively associated with a related one of said predetermined number of support elements;
each said rotatable traveling ring defining an outer traveling ring diameter which is smaller than said inner roll shell diameter by a predetermined amount; and
said rotatable traveling rings being loosely inserted into said interior space defined by said roll shell such that said traveling rings are rotatable about said stationary roll support member independently of said roll shell.

4,583,274

METHOD OF MAKING AN AIRFOIL

Donald J. Moracz, Garfield Heights; Charles R. Cook, Euclid, and Istvan J. Toth, Richmond Heights, all of Ohio, assignors to TRW Inc., Cleveland, Ohio

Division of Ser. No. 353,403, Mar. 1, 1982, Pat. No. 4,472,866.
This application Sep. 20, 1984, Ser. No. 652,759
Int. Cl.[4] B21K 3/04; B23P 15/02, 15/04
U.S. Cl. 29—156.8 B 5 Claims



1. A method cf making an airfoil, said method comprising the steps of forming an airfoil blank having first and second major side surfaces extending between leading and trailing edge portions of the airfoil blank, dividing the airfoil blank into a plurality of separate sections which include first and second sections with the first major side surface on the first section and the second major side surface on the second section, removing material from the first section to form a cavity in the first section, placing a core in the cavity, interconnecting the first and second sections with the core disposed in the cavity in engagement with the first and second sections, shaping the first and second sections with the core between them, and thereafter removing the core from the cavity while first and second sections are interconnected.

4,583,275

TRANSMISSION DIRECT CLUTCH DRUM REMOVING AND INSTALLING TOOL

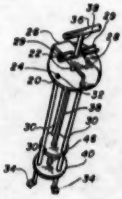
Eusebio M. Diaz, 6450 Balboa Blvd., Van Nuys, Calif. 91406

Filed Aug. 30, 1985, Ser. No. 770,972
Int. Cl.[4] B25B 27/14
U.S. Cl. 29—278 4 Claims

1. A clutch drum removing and installing tool for a General Motors Corporation Turbo-Hydromatic 400 automatic transmission direct clutch drum comprising:
(a) a round plate platform base having a centrally located clearance hole and a plurality of attaching holes on a radial centerline;
(b) a spacer channel having a bore in the middle thereof affixed upon the top periphery of said base providing a spaced relationship of said clearance hole and said bore for alignment therebetween;
(c) a plurality of positioning legs having attaching means pivotally connected to the underside of said round plate platform base.
(d) a flat outwardly projecting retainer having a down-

wardly descending lip integral with each positioning leg on the end opposite said attaching means where said retainer grips the compoents within said direct clutch drum; and

(e) a T-shaped operating handle comprising a vertical rod having a horizontal handle section on one end and a leg directing expansion guide disc on the other end, where said rod slidably penetrates the clearance bore in said base



and the bore in said spacer channel for placement of said legs and containment of components within said clutch drum, operated by insertion of the tool into the drum with the handle extended while the legs are grouped closely together and pushing the handle downwardly so that said handle is in a contiguous relationship with said channel in which position, the legs are forced to expand outwardly to a predetermined spaced relationship in alignment with the sides of the clutch drum.

4,583,276

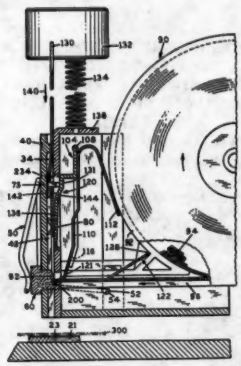
METHOD OF FORMING AND DRIVING STAPLES

Paul Olesen, Bellmore, N.Y., assignor to Swingline, Inc., Long Island City, N.Y.

Division of Ser. No. 506,991, Jun. 23, 1983. This application Jan. 14, 1985, Ser. No. 691,050

Int. Cl.⁴ B23P *11/00*

U.S. Cl. 29—432.1 **3 Claims**



1. In a method of forming and driving staples through a workpiece and against an anvil in which side-by-side staple wires are fed from a staple wire belt which staple wire belt has a lead staple wire and in turn is led from a cartridge with a chute, the staples are formed and thereafter driven, the improvement comprising

(a) urging the belt of staple wires along the cartridge chute into a forming means employing urging means which engage with the belt, thereafter;

(b) guiding the staple wire belt with such chute until the belt reaches the forming means;

(c) moving a driving means through a portion of its downward stroke which driving means carries with it a forming means; said driving means and forming means being positively engaged through engagement means;

(d) forming a staple by the downward movement of said engaged driving means and forming means to bend downwardly the ends of the staple wire;

(e) carrying said formed staple through action of the driving means further downward while said formed staple remains in and is guided by the forming means;

(f) disengaging the positive engagement means between the driving means and the forming means and thereafter causing the driving means to frictionally engage the forming means to carry such forming means downwardly with the driving means until the forming means strikes the workpiece at which time the frictional engagement of the forming means is overcome allowing the forming means to be arrested where it strikes the workpiece;

(g) striking the formed staple with said driving means to carry said formed staple still further downward and into the workpiece with said staple being in and guided by the forming means until the staple enters the workpiece; and

(h) positioning the cartridge to be aligned with the forming means and continuously guiding that portion of the staple belt up to the lead staple of the belt.

4,583,277

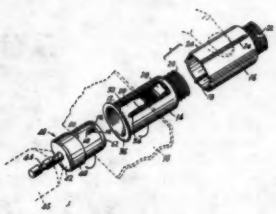
METHOD UTILIZING A CIGAR LIGHTER SOCKET SHELL DRIVER TOOL

Laurence G. Horwitt, Dania, Fla., assignor to Casco Products Corporation, Bridgeport, Conn.

Division of Ser. No. 478,793, Mar. 25, 1983, Pat. No. 4,497,226. This application Dec. 24, 1984, Ser. No. 685,730

Int. Cl.⁴ B21D *39/04, 39/06;* B23P *11/00*

U.S. Cl. 29—456 **4 Claims**



1. The method of assembling the socket for a cigar lighter igniting unit to the clamping shell therefor, said socket being of the type having an out-turned flange for engagement with an apertured mounting plate in an automobile, and having screw threads at its inner end, and said clamping shell having at one end cooperable screw threads adapted to mate with the screw threads of the socket, and at its other end an abutment shoulder adapted to engage the rear surface of the mounting plate, said method employing a power tool and a tool bit comprising a drive member having means receivable in the chuck of the power tool to effect a rotary drive of the member, and further comprising a plug member carried by the drive member, a bearing between the members to enable them to rotate with respect to one another, and wherein the plug member has a portion receivable in the socket and a shoulder for engagement with the out-turned flange of the socket to limit the degree of insertion thereof into the socket, the plug member having means that are engageable with the socket so as to turnably drive the latter while the clamping shell is being held, and the tool bit having a slip clutch made operative in response to application of a predetermined torque thereto, comprising the steps of:

(a) inserting the tool bit into the chuck of the power tool and tightening said chuck,

(b) inserting the socket of the cigar lighter through the aperture of the mounting plate of the automobile, and positioning the clamping shell on the other side of the plate so that the threads of the socket and shell become engaged,

(c) inserting the tool bit into the mouth of the socket until the shoulder of the plug member engages the flange of the socket,

(d) locking the plug member of the bit to the socket of the cigar lighter against relative rotary movement so as to form a unitary drive assemblage therewith,

(e) holding the clamping shell against rotation,

(f) energizing the power tool so as to rotate the socket and advance the threads thereof into the clamping shell threads until the plug member and socket cease to have relative turning with respect to the clamping shell, and

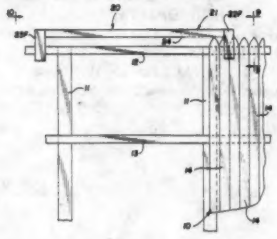
(g) thereafter withdrawing the tool bit from the cigar lighter socket.

4,583,278

FENCE BUILDING AID AND METHOD

Jose O. Flores, and Amalio G. Flores, both of Grand Prairie, Tex.

Filed Dec. 26, 1984, Ser. No. 686,277
Int. Cl.[4] B23Q *3/00*; B25B *27/14*; G01B *3/00, 3/14*
U.S. Cl. 29—467 **17 Claims**



1. A guide for the securing of pickets to the rails of a picket fence, on which the pickets are secured to said rails with a selected rise above the fence top rail; said guide comprising

a straight edge beam having a lower beam face against which the tops of the fence pickets are to be abutted;

a pair of downwardly extending legs secured to said beam at one end thereof, spaced to straddle and enclose the thickness of the fence top rail and a picket secured thereto whereby said one end of said beam face will rest on the top of a secured picket;

a pair of downwardly extending legs secured to said beam at the other end thereof, spaced to straddle and enclose the thickness of said fence top rail;

a support block mounted between said legs at said other end of said beam; said support block having a downward facing support face spaced from said beam face the distance of said selected picket rise, and adapted to support said other beam end on the top of said fence top rail.

10. A method for aligning the pickets of a picket fence consisting of vertical posts, generally horizontal rails, and generally vertical pickets, comprising the steps

securing a picket to the rails of said fence, with the top of said picket having a selected rise above the top rail of said fence;

supporting a straightedge beam over said top rail, having a lower beam face to be abutted by the tops of the fence pickets to be secured;

supporting one end of said beam on the top of said one picket;

supporting the other end of said beam on the top of said fence top rail by means of a support member spaced from said beam face a distance corresponding to said picket rise; and abutting the tops of successive pickets against said beam face prior to securing said pickets to the rails of said fence.

4,583,279

METHOD OF MOUNTING AUTOMOTIVE SEAT COVERS

Peter G. Varunes, 203 Howard Ave., New Haven, Conn. 06519

Filed May 14, 1984, Ser. No. 609,656
Int. Cl.[4] B23P *19/00, 11/00*; B68G *7/00*
U.S. Cl. 29—526 A **4 Claims**

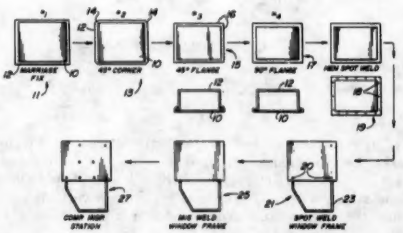
1. The method of mounting a seat cover on an automotive front seat having inverted front and side channels, and a seat fabric folded with its front and side margins over the outer legs of said front and side channels to the inside of said legs and being secured thereto, said method comprising extending a metal strip in said channels along the bottoms thereof and securing it thereto, with said strip having over its length anchor holes for C-rings, folding the front and side margins of a seat cover over the folded front and side margins of the seat fabric on the outer legs of said channels and extending them toward the adjacent metal strip, and applying C-rings to said extended margins of the seat cover and adjacent holes in said metal strip.

4,583,280

METHODS AND MEANS FOR SEQUENTIALLY MEASURING THE TIMES INVOLVED IN A PLURALITY OF MANUFACTURING OPERATIONS AND FOR DETECTING MECHANICAL MALFUNCTIONS IN AN AUTOMATED SYSTEM

James I. Corrigan, Laurel Springs, N.J., and Casper P. Lunova, Churchville, Pa., assignors to The Budd Company, Troy, Mich.

Filed Dec. 23, 1982, Ser. No. 452,660
Int. Cl.[4] B22P *23/06*; B23Q *7/00*
U.S. Cl. 29—563 **8 Claims**



1. In combination with a conveyor for transporting mechanical components through a plurality of stations for performing a series of steps at each station in the manufacturing of said component,

means for monitoring and recording data relating to said series of steps at each of said stations comprising:

(a) electrical means at a first station for starting and stopping each of said series of steps and causing the operation of the next of said series of steps until all the steps at said first station have been completed;

(b) second electrical means for sensing the last of the series steps of said first station and causing said component to be sequentially transferred by said conveyor to a next station;

(c) means for measuring and recording the cycle times of each of said series of steps at said plurality of stations,

(d) second means for measuring and recording the total time of the series of steps at each of said plurality of stations, and

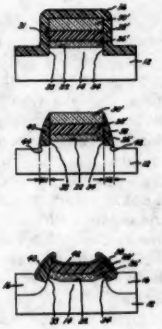
(e) said series of steps including a plurality of actuating mechanical elements responsive to said electrical means to sequentially perform said series of steps.

4,583,281

METHOD OF MAKING AN INTEGRATED CIRCUIT

Mario Ghezzo, Ballston Lake, and Manjin J. Kim, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 13, 1985, Ser. No. 711,333
Int. Cl.[4] H01L *21/95*
U.S. Cl. 29—576 W **7 Claims**



1. A method of forming an electrically isolated region on a major surface of a silicon semiconductor substrate, said method comprising the steps of:

providing said substrate of silicon semiconductor material having a major surface;

forming a first layer of silicon dioxide on said major surface of said substrate;

forming a second layer of silicon nitride on said first layer, said second layer being substantially thicker than said first layer;

forming a third layer of silicon dioxide on said second layer, said third layer being substantially thicker than said second layer;

patterning said first, second and third layers to leave retained portions thereof overlying said region;

forming a fourth layer of silicon nitride over the exposed surfaces of said substrate and said retained portions of said first, second and third layers;

selectively removing said fourth layer to leave retained portions thereof covering the sidewalls of said retained portions of said first, second and third layers;

removing said retained portion of said third layer; and

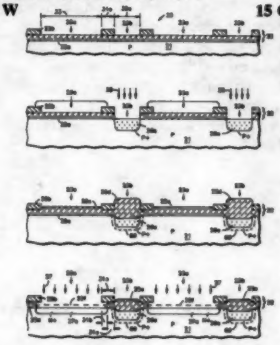
heating said substrate in an oxidizing atmosphere to a temperature and for a time to convert the exposed surfaces thereof bounding said region into a field of silicon dioxide.

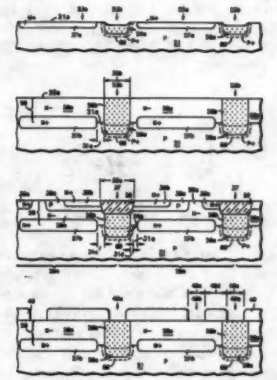
4,583,282

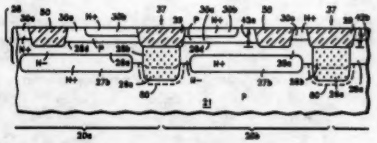
PROCESS FOR SELF-ALIGNED BURIED LAYER, FIELD GUARD, AND ISOLATION

Terry S. Hulseweh, and Carroll Casteel, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 14, 1984, Ser. No. 650,969
Int. Cl.[4] H01L *21/80, 21/76*
U.S. Cl. 29—576 W **15 Claims**







1. A process for fabricating semiconductor devices comprising:

providing a single crystal semiconductor substrate of a first conductivity type;

covering a first surface of said substrate with a first masking layer;

opening a first pattern in said first masking layer, wherein said first pattern has a first open portion located above a first portion of said substrate and a second open portion located above a second portion of said substrate;

covering said first open portion with a second masking layer leaving said second open portion uncovered;

rendering non-single crystal said second portion of said single crystal substrate below said second open portion;

removing said second masking layer;

providing a third masking layer in said second open portion;

doping said first portion of said single crystal substrate to a second conductivity type;

exposing said first surface of said substrate; and

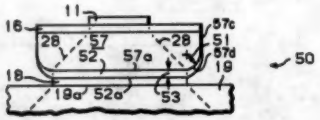
growing on said first surface of semiconductor layer having a first layer portion which is non-single crystal above said non-single crystal portion of said substrate and a second layer portion which is a single crystal substantially elsewhere.

4,583,283

ELECTRICALLY ISOLATED SEMICONDUCTOR POWER DEVICE

Jerry M. Dubois, Mesa, and Keith G. Spanjer, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 362,273, Mar. 26, 1982, Pat. No. 4,510,519.
This application Jan. 22, 1985, Ser. No. 693,695
Int. Cl.[4] H01L *23/02, 23/30, 29/06*
U.S. Cl. 29—589 **8 Claims**



1. A method for manufacturing an electrical device adapted to receive at least one semiconductor die, comprising:

forming a metallic heat spreader having a base portion with a first surface adapted to receive semiconductor die, a second surface opposite said first surface adapted to receive refractory dielectric coatings, and a side portion coupled to said first and second surfaces;

forming a base lead portion extending from said base portion of said metallic heat spreader;

shaping said metallic heat spreader so that said base portion has a first thickness and said base lead portion has a second thickness;

configuring said base lead portion so that it has a first extension portion ending in a first terminal portion;

creating a substantially smooth surface on said metallic heat spreader having a predetermined minimum radius of curvature and joining said side portion and said second surface;

coating said second surface and a portion of said substantially smooth curved surface with a refractory dielectric of predetermined thickness chemically bonded to said second surface, and said substantially smooth surface;

regulating said thickness of said refractory dielectric coating to be less than said predetermined minimum radius of curvature; and

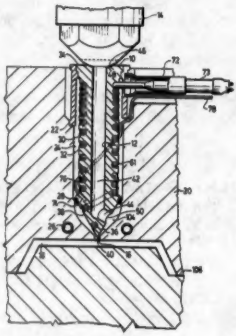
attaching to said first surface of said base portion, by electrically insulating means, at least one additional lead having a second extension portion ending in a second terminal portion.

4,583,284

METHOD OF MANUFACTURE OF INJECTION MOLDING HEATED NOZZLE WITH BRAZED IN HEATING ELEMENT

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada (L7G 2X1)

Division of Ser. No. 642,340, Aug. 20, 1984, Pat. No. 4,557,685.
This application May 23, 1985, Ser. No. 737,271
Claims priority, application Canada, Jul. 13, 1984, 458899
Int. Cl.[4] H05B *3/00*
U.S. Cl. 29—611 **9 Claims**



1. A method of manufacturing an integral injection molding heated nozzle, comprising the steps of:

(a) forming an elongated steel body with an inlet end, an outlet end, and a generally cylindrical outer surface, the body having a melt bore extending longitudinally therethrough from a central melt inlet at the inlet end to a melt outlet adjacent the outlet end, the generally cylindrical outer surface having a generally spiral channel extending therein from a first end adjacent the inlet end of the body to a second end adjacent the outlet end of the body;

(b) locating an electrically insulated heating element in the channel to extend helically around the body of the nozzle, the heating element having a cold terminal extending from the first end of the channel;

(c) applying a bead of highly conductive material along the heating element adjacent the channel; and

(d) heating the body in a vacuum furnace for a period of time and at a temperature sufficient to melt the highly conductive material and bond it to the heating element in the channel to integrally embed the heating element in the channel.

4,583,285

METHOD OF MAKING SELF-SUPPORTING ELECTRODE FOR SEA-WATER BATTERIES

Bivabasu Chatterjee, Chessington, and Frank G. Wilson, Guildford, both of England, assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Feb. 11, 1985, Ser. No. 700,166
Claims priority, application United Kingdom, Feb. 15, 1984, 8404001
Int. Cl.[4] H01M *6/00*
U.S. Cl. 29—623.5 **11 Claims**

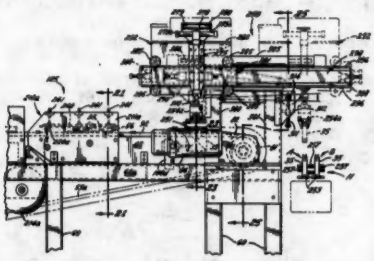
1. A process for manufacturing a cathode for a sea-water battery, which comprises forming a particulate mixture of silver chloride and a substitute therefor which has cathodic properties in sea-water, forming the mixture into a substantially solid mass without melting, and annealing the substantially solid mass by heating to a temperature just below the melting point of the mass.

4,583,286

APPARATUS AND METHOD FOR PROCESSING AND TRANSFERRING BATTERY CELL ELEMENTS

Edward G. Schaumburg, Askov; Peter A. Recht, Minneapolis, and Mark R. Frich, Maplewood, all of Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed Mar. 28, 1983, Ser. No. 479,491
Int. Cl.[4] B23P *19/00*
U.S. Cl. 29—730 48 Claims



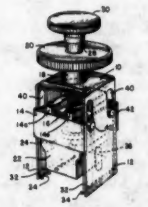
1. An apparatus for transferring and processing battery cell elements having a plurality of electrode plates each plate having a lug at a common end and being separated by an insulating material, comprising power driven conveyor means having a loading station, a discharge station, and a plurality of longitudinally spaced element carriers supported for movement along a defined path between said loading and discharge stations; said loading station including means for successively transferring elements to carriers while located at said loading station; said carriers each having means for positively engaging an element at said loading station, supporting and carrying the engaged element for movement along said path, and for releasing the element at said discharge station; said discharge station including means for successively engaging elements in said carriers while located at said discharge station and transferring said elements away from said discharge station; and a plurality of processing stations located along said path of movement for simultaneously processing elements carried by a plurality of said carriers.

4,583,287

COMBINATION INSERTION-EXTRACTION TOOL FOR INTEGRATED CIRCUITS

John E. McDevitt, Cumberland, R.I., and Ronald E. Senor, North Attleboro, Mass., assignors to Augat Inc., Mansfield, Mass.

Filed Jul. 12, 1985, Ser. No. 754,530
Int. Cl.[4] H05K *13/04*
U.S. Cl. 29—741 15 Claims



1. A tool for inserting and extracting an electronic component respectively into and from a circuit board, comprising:

a bracket having an inverted U shape, the sides constituting bracket legs which support the tool upon a circuit board, and the part connecting said bracket legs constituting the top of said bracket;

a first block, possessing a top surface, and being slideably mounted between said bracket legs, adjustable in the vertical direction, and adapted for attachment to a shaft for positioning said block vertically;

side plates having upper and lower ends, each side plate being attached at its upper end to said first block between said first block and said bracket legs, and terminating at its lower end in a plurality of spaced tines pointing away from the adjacent bracket leg and toward the opposing side plate, each of said side plates having at least one indentation in the side facing the adjacent bracket leg, creating a corresponding protrusion in said side plate below said first block;

a second block, slideably mounted between said side plates below said first block and movable in the vertical direction, said second block having protruding shoulders with a width sufficient to meet said side plates in the areas above said protrusions in said side plates;

a first shaft, having upper and lower portions and a hollow bore, said first shaft being moveably and vertically mounted in the top of said bracket, the lower portion of said first shaft being adapted for mating with said first block, the combination of said first shaft and said first block permitting vertical adjustment of said first block relative to said bracket;

a second shaft having upper and lower ends, said second shaft extending though said hollow bore of said first shaft and being biased upward relative to said first shaft, and attached at its lower end to said second block and at its upper end to a plunger knob;

said tool thus being constituted such that movement of said first shaft raises and lowers said first and second blocks and said associated side plates, depression of said plunger knob depresses said second shaft, which causes said second block to be depressed relative to said first block so that the shoulders of said second block contact said protrusions in said side plates, forcing said side plates and said bracket legs to spread, and the release of a depressed plunger knob causes said second block to retract and said side plates and bracket legs to return to their original positions;

said tool being operative to insert an electrical component into a circuit board by first grasping said electrical component between said side plates, and then releasing said component while simultaneously pushing it into place as said second block is forced down in response to depression of said second shaft;

said tool being operative to extract an electronic component from a circuit board by grasping said electronic component between said side plates and raising said first block, said side plates, and said component in response to movement of said first shaft.

4,583,288

APPARATUS FOR THE ACQUISTION AND INSERTION OF DUAL IN-LINE PACKAGE COMPONENTS

Steven J. Young, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 513,135, Jul. 12, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 750,649
Int. Cl.[4] H05K *13/04*
U.S. Cl. 29—741 22 Claims

1. An end effector for acquiring a dual-in-line package device and inserting said device into a circuit board or the like comprising:

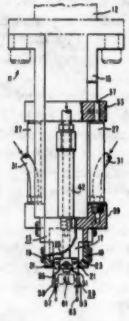
a gripper body portion having a chamber therein of a predetermined dimension;

a pair of multi-fingered gripper means operably associated with said body portion for reciprocal movement between a first, fully-extended device acquisition position and a second fully retracted position within said body portion

chamber, said pair of multi-fingered gripper means also being pivotally movable from an open spaced apart relationship during acquistion and insertion of the dual in-line package device to a closed relationship for engaging and loading the dual in-line device into the body portion;

means operably associated with said multi-finger gripper means for effecting said reciprocal movement;

means operably associated with said body portion for retaining in said chamber an acquired dual in-line package device in a loaded condition for insertion after said pair of



multi-fingered gripper means have moved into an open spaced apart relationship; and

means operably associated with said body portion and in communication with said chamber for urging said dual in-line package device from said retaining means and inserting said device into the circuit board or the like and wherein said fingers are maintained in said second fully retracted position within said body portion chamber as said means for urging are effecting the insertion of said device.

4,583,289

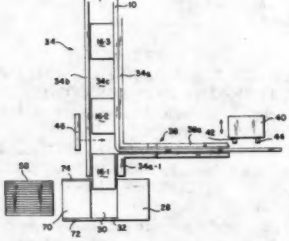
SYSTEM AND APPARATUS FOR TERMINATION OF FLAT CABLE

William R. Beck, Warren, N.J.; William Jahn, Iowa City, Iowa; Steven R. Koltenback, Doylestown, Pa.; Robert M. Scharf, Bedminster, and Ronald Schwab, Budd Lake, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Dec. 31, 1984, Ser. No. 687,621

Int. Cl.[4] H01R *43/04*

U.S. Cl. 29—749 **6 Claims**



1. A system for mass termination of multi-conductor flat cable by insulation-displacement contact connectors, comprising:

(a) means for winding and advancing a reeled substrate having said connectors releasably secured thereto;

(b) means for removing said connectors from said substrate;

(c) die means for individually seating such removed connectors and for forcing conductors of said cable into electrical engagement with the contacts of such removed connectors; and

(d) cable guide means for receiving said cable and entering into said seated connectors for guiding said cable into registry with said contacts thereof.

4,583,290

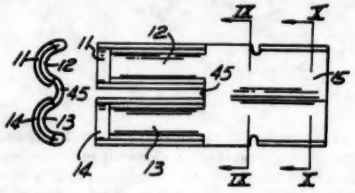
METHOD FOR MAKING CONTACT ASSEMBLY FOR AN ELECTRICAL CONNECTOR

Valentine J. Hemmer, Sidney, N.Y., assignor to Allied Corp., Morristown, N.J.

Division of Ser. No. 499,689, May 31, 1983, abandoned. This application Dec. 3, 1984, Ser. No. 677,266

Int. Cl.[4] H07K *43/16*

U.S. Cl. 29—874 **3 Claims**



1. A method of making an inner sleeve for a three-piece contact assembly said sleeve having a forward mating portion and a rearward wire receiving portion, the steps of the method comprising:

providing a metal sheet with a pair of generally rectangular and longitudinally extending sheet portions, said sheet having a top and bottom surface, one and the other said sheet portions defining respectively, a pair of longitudinal edges, and said one sheet portion further including a forward lateral edge and three laterally separated slots each extending longitudinally rearward from the lateral edge whereby to define a first, second, third and fourth finger with each adjacent pair of fingers being joined by a longitudinal web portion,

laterally folding the one sheet portion so that the first and second fingers and the third and the fourth fingers are confronting,

forming the one sheet portion into a cylindrical sleeve portion wherein one respective finger of each said first and second fingers and said third and fourth fingers is disposed radially inward of said sleeve portion, and

inwardly bending the free end of each radially inward finger whereby to radially separate the free ends of the two inward fingers from the respective free ends of the two outer fingers.

4,583,291

ELECTRIC CHAIN SAW SPEED REDUCTION DEVICE

Edward J. Pilatowicz, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Jun. 1, 1984, Ser. No. 616,142

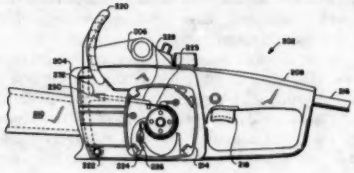
Int. Cl.[4] B27B *17/02*

U.S. Cl. 30—383 **8 Claims**

1. In an electric chain saw comprising a housing; a guide bar mounted on said housing; an endless cutter chain extending around said guide bar and slidingly supported thereon for rotation in a predetermined direction thereabout; a drive sprocket, rotatable about an axis, drivingly engaging said cutter chain; an electric motor, having a rotatable drive shaft, mounted within said housing; and a safety braking mechanism to stop the drive shaft from rotating upon occurrence of a kickback; the improvement comprising:

speed reduction means for drivingly connecting said drive shaft and said drive sprocket for rotation in the same direction and reducing the rotational speed of said drive sprocket as compared to the rotational speed of said drive shaft,

said speed reduction means comprising a first rotatable member of predetermined radius, rotatable about an axis, directly driven by said drive shaft for rotation therewith; a second rotatable member of predetermined radius, rotatable about an axis; first connecting means for coaxially connecting said second rotatable member and said drive sprocket for rotation in the same rotational direction about their common axis at the same rotational speed, said first connecting means comprising a first shaft, rotatable about an axis, said second rotatable member attached to



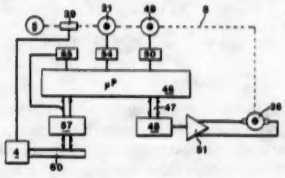
said first shaft for rotation therewith, and said drive sprocket detachably connected to said first shaft for rotation therewith, said first shaft supported by a first bearing and a second bearing, said first bearing located between said drive sprocket and said second rotatable member, and said second bearing located on the opposite side of said second rotatable member from said first bearing; and endless drive loop means for drivingly connecting said first and second rotatable members for rotation of said first and second rotatable members in the same rotational direction as said cutter chain, said endless drive loop means comprising a single endless drive loop extending about said first and second rotatable members, said drive loop drivingly engaging said first and second rotatable members, whereby the rotational inertia of said electric motor opposes kickback of said chain saw.

4,583,292

LOW INERTIA X-Y CABLE DRIVE

Edwin Langberg, 13 Valley Forge Ct., Marlton, N.J. 08053

Filed Aug. 10, 1984, Ser. No. 640,043
Int. Cl.[4] G01B *5/24*
U.S. Cl. 33—1 M **10 Claims**



1. A plotter comprising

a plotting surface covered by a marking sheet when in operation,

a marker which on a write command marks a trace on the marking sheet,

a marker housing which supports the marker,

flexible links, each connecting the marker housing to a motor,

a flexible link guiding mechanism which guides the flexible link between the marker and the motor,

sensors attached to each said flexible link which convert length parameters of the flexible link into corresponding feedback signals,

force sensor attached to each said flexible link which converts tension on the flexible links into a corresponding feedback signal,

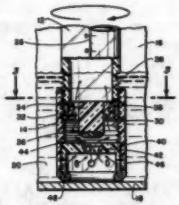
trajectory control means which accept input data and said feedback signals, calculate operational parameters to control said motors and generate said write command so as to mark the trace on the marking sheet corresponding to said input data.

4,583,293

LIQUID LEVEL GAUGE AND SAMPLING DEVICE

Wanda L. Smith, 1247 Petit Ave., #461, Ventura, Calif. 93004

Filed Apr. 30, 1984, Ser. No. 605,307
Int. Cl.[4] G01F *23/04*; G01B *5/18*
U.S. Cl. 33—126.4 R **5 Claims**



1. A liquid level determining and sampling device comprising:

an elongated tubular member having a lower end and an upper end, said lower end including a series of exterior screw threads, a sealing plug secured within said tubular member, a first opening assembly mounted about said sealing plug, liquid is to be able to be conducted through said first opening assembly into the interior of said tubular member;

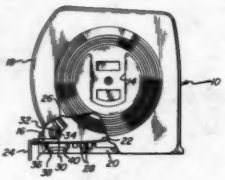
a sleeve having a lower end and an upper end, said upper end connected to said exterior screw threads, within and across said sleeve there is mounted a sealing plate, said sealing plate having a hole, said tubular member being movable relative to said sleeve between a lower position and an upper position, said lower position being when said sealing plug closes said hole, said upper position being when said sealing plug is spaced from said hole permitting passage of liquid through said hole and said first opening assembly into said tubular member; and

a second opening assembly formed through the side wall of said sleeve, said second opening assembly connecting with said hole, whereby said lower end of said sleeve is to be positioned against and frictionally engaged with the bottom of a tank of liquid and with said tubular member in said upper position liquid is permitted to be conducted within said tubular member to obtain its own level, and the operator can then rotate said tubular member relative to said sleeve which is frictionally engaged with the bottom of the tank which results in said tubular member being located in said lower position thereby confining the liquid within said tubular member, said tubular member to be withdrawin form said tank to thereby determine the level of liquid within the tank and also the type of liquid.

4,583,294
COILABLE RULE HOUSING WITH DISCHARGE SLOT FOR DIRT AND THE LIKE

Walter J. Hutchins, West Hartford, and Mark A. Drechsler, Southington, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed May 13, 1985, Ser. No. 733,080
Int. Cl.[4] G01B 3/10
U.S. Cl. 33—138 8 Claims

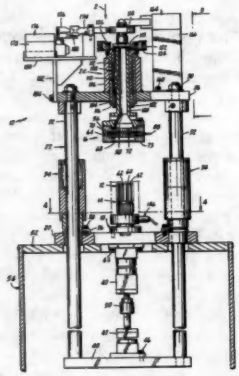


1. A housing for a coilable tape measuring rule comprised of opposed sidewalls and peripheral structure extending thereabout and defining an enclosure therewith, said peripheral structure including a bottom wall and a front wall, said housing having (i) means therein for mounting a spool on which the rule blade is coiled, (ii) a mouth formed near the base of said front wall, and (iii) means for guiding the blade from the spool through said mouth for extension from and retraction into said housing, said bottom wall of said housing having a relatively small aperture formed therethrough for the discharge of particulate contaminating matter from said enclosure, said aperture being spaced from but closely adjacent said front wall.

4,583,295
SPLINE GAUGING APPARATUS

Joseph A. Gresock, 9296 Perry Rd., Atlas, Mich. 48411, and Anthony A. Sulfaro, Flushing, Mich., assignors to Joseph A. Gresock, Atlas, Mich.

Filed Apr. 10, 1985, Ser. No. 721,584
Int. Cl.[4] G01B 5/12
U.S. Cl. 33—179.5 R 23 Claims

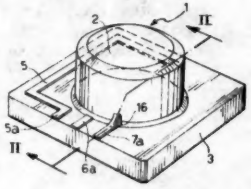


1. An apparatus for gauging a spline of a workpiece comprising, a gauge head constructed and arranged to receive a spline gauge having at least two axially spaced elements constructed and arranged to be relatively rotated to a first angular position wherein they are generally aligned and can be inserted in a groove between adjacent teeth of a spline of a workpiece and to a second angular position wherein they bear on a portion of generally opposed faces of adjacent teeth of the spline, a transducer operably associated with the gauge and constructed and arranged to provide an electric signal indicative of the relative angular position of the elements of the gauge, a locator constructed and arranged to receive and locate a workpiece having a spline such that the axis of the spline is generally coaxial with the axis of a gauge carried by the gauge head, a first actuator constructed and arranged to impart relative movement between said gauge head and locator generally axially toward and away from each other, a lost motion means operably associated with at least one of said gauge head and locator and constructed and arranged to yield when said first actuator moves said gauge head and said locator toward each other sufficiently so that the gauge carried by said head bears on the workpiece carried by the locator, the gauge when bearing on the workpiece adjacent an end of the spline being yieldably urged toward the workpiece independently of the said first actuator, a second actuator operatively associated with at least one of said locator and gauge head and constructed and arranged to impart relative rotation therebetween with the gauge bearing on the workpiece and the elements thereof in the first position so that when they become axially aligned with at least some of the grooves between the teeth of the spline they are moved by said yieldable urging at least partially into such grooves, thereafter said first actuator relatively moves said head and locator toward each other to generally axially advance the elements of the gauge fully into such grooves, and a third actuator constructed and arranged to thereafter impart relative rotation between the elements of the gauge to move them to their second position wherein they bear on a portion of generally opposed faces of the teeth of the spline of the workpiece, whereby the transducer provides a signal indicative of a measurement of the spline of the workpiece.

4,583,296
ELECTRICAL INCLINATION SENSOR AND METHOD FOR ITS MANUFACTURE

Roberto Dell'Acqua, Pavia, Italy, assignor to Marelli Autronica S.p.A., Italy

Filed May 7, 1985, Ser. No. 732,786
Claims priority, application Italy, May 7, 1984, 67460 A/84
Int. Cl.[4] G01C 9/06
U.S. Cl. 33—366 16 Claims



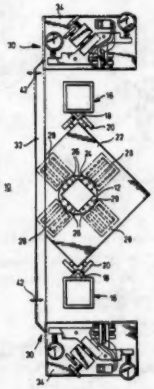
1. Electrical inclination sensing device comprising a body in which there is formed a closed chamber containing a predetermined quantity of electrically conductive liquid which almost fills it so as to form a bubble, at least one main electrode and at least one first and one second auxiliary electrode extending into the chamber through the body and accessible from the exterior of the body, so that any variation in inclination of the body relative to at least one predetermined direction causes a movement of the bubble and a corresponding variation in the electrical resistance measurable between each auxiliary electrode and the main electrode, wherein the body comprises first and second elements of which at least one has a cavity, the elements being sealed together to form the said chamber, and wherein the main and auxiliary electrodes are constituted by strips of electrically conductive material deposited by screen printing on at least one of the elements.

4,583,297

POSITION SENSING APPARATUS

George S. Jewell, Kingston, Canada, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 5, 1984, Ser. No. 678,520
Claims priority, application Canada, Mar. 21, 1984, 450131
Int. Cl.[4] G01B *7/28*
U.S. Cl. 33—533 **12 Claims**



6. An apparatus for measuring the surface position of an elongate article of manufacture comprising a frame to which said article is fixedly positioned and vertically supported and a carriage movably mounted on said frame for travel along a vertical path, said carriage including means for measuring the relative displacement of the surfaces of said article from reference positions of said measuring means, a position sensing apparatus for sensing and measuring displacement of said carriage about and from its ideal vertical path of travel, and means for compensating the measurements of relative displacement of the surfaces with corresponding measurements relating to the sensed displacement of the carriage, said position sensing apparatus including two elongate reference means extending parallel to the ideal vertical path of travel of said carriage and two sensing means mounted for movement with said carriage, each said sensing means being normally positioned a predetermined distance from a respective one of the elongate reference means, and each said sensing means being movable into engagement with its respective one of said elongate reference means such that displacement of said two sensing means when moved to engage said two elongate reference means is representative of the displacement of said carriage from and about its ideal vertical path of travel.

4,583,298

AUTO CALIBRATION METHOD SUITABLE FOR USE IN ELECTRON BEAM LITHOGRAPHY

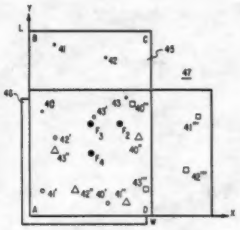
Michael R. Raugh, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 7, 1984, Ser. No. 587,084
Int. Cl.[4] G01C *25/00*
U.S. Cl. 33—502 **17 Claims**

1. A method of calibrating measurement values produced by a measuring device, said method being of the type in which a calibration map is used to map measured values into a calibrated coordinate system to correct for distortions in the measurement process, in which the calibration map contains a first set of parameters that are determined by the calibration method and in which the locations of points in a grid on a calibration plate are measured, said method comprising the steps of:

(a) orienting the calibration plate in a plurality of different orientations related to one another by the physical values of a second set of parameters, one of said orientations being referred to herein as the reference orientation and the other orientations being referred to herein as non-reference orientations;

(b) for each orientation, measuring the locations of the points in the grid;



(c) for each orientation, by use of the calibration map, determining the calibrated measured values for each grid point, thereby producing in the calibrated coordinate system an image of the grid for that orientation;

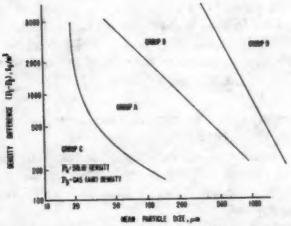
(d) selecting numerical values for the first and second sets of parameters to minimize the deviation from congruence with one another of the images of the grid in the calibrated coordinate system.

4,583,299

FLUIDIZATION AID FOR COHESIVE MATERIALS

Edward F. Brooks, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 684,424, Dec. 20, 1984, which is a continuation-in-part of Ser. No. 620,996, Jun. 15, 1984, which is a continuation-in-part of Ser. No. 339,778, Jan. 15, 1982, abandoned, which is a continuation of Ser. No. 188,201, Sep. 18, 1980, abandoned. This application Jan. 30, 1985, Ser. No. 696,670
Int. Cl.[4] F26B *3/08;* F27B *15/00;* C10G *35/00;* B01J *23/00*
U.S. Cl. 34—10 **17 Claims**



10. A composition suitable for fluidization in a mixed fluidized bed comprising:

(a) a cohesive material having a mean particle size of from 0.1 to 120 microns and a particle density of from 0.1 to 4 g/cm^3; and

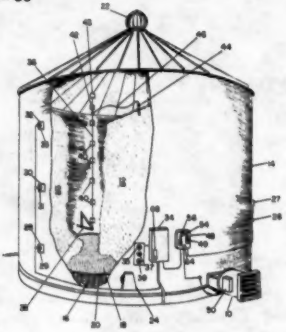
(b) tendrillar carbonaceous material having a bulk density of from about 0.04 to about 0.7 g/cm^3 and comprising an agglomeration of tendrils having a diameter of from about 0.01 to about 1 micron and a length to diameter ratio of from about 5:1 to about 1000:1.

4,583,300

AUTOMATIC GRAIN DRYING SYSTEM

Milford S. Mast, Elverson, Pa., assignor to Advanced AG Systems, Inc., Elverson, Pa.

Filed Jan. 16, 1984, Ser. No. 570,933
Int. Cl.[4] F26B *21/06*
U.S. Cl. 34—50 **19 Claims**



1. An automatic grain drying system comprising:
a grain storage container;
a blower moving air from outside the storage container through grain located within the storage container;
a control system which monitors temperature and moisture of grain within the storage container and temperature and moisture of air outside the storage container and automatically operates the blower or blocks operation of the blower depending upon the relationship of the temperature and moisture of the stored grain to the temperature and moisture of the outside air; and
timer means selectively actuatable manually by an operator to operate the blower manually, without influence by the temperature and moisture levels of the grain and air, for a specific period of time, and then operable automatically after said specific time period to return the system to automatic control.

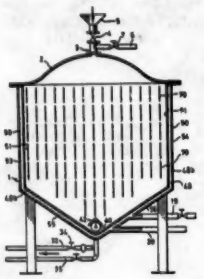
4,583,301

VARIABLE VOLUME VACUUM DRYING CHAMBER

J. David Crowley, Dundas, and Glen A. Pearce, Rockwood, both of Canada, assignors to U-OP Management & Consultants Ltd., Orangeville, Canada

Continuation-in-part of Ser. No. 461,071, Jan. 26, 1983, abandoned. This application Jun. 8, 1984, Ser. No. 618,802
Claims priority, application Canada, Jan. 26, 1984, 446068
Int. Cl.[4] F26B *19/00, 21/10*
U.S. Cl. 34—73 **48 Claims**

1. An apparatus for reducing the moisture content of a material, the apparatus comprising:
a variable volume chamber adapted to receive such material, in which chamber the moisture content of the material is reduced and which chamber is at least partially defined by rigid walls;
heating means within the chamber arranged to heat the material by direct contact with the material; and
pumping means connected to the chamber for pumping fluid from the chamber and capable of maintaining a sub-atmospheric pressure equivalent to at least 16 inches of mercury below atmospheric pressure in the chamber sufficient to substantially reduce (the) heat input from the heating means required to heat material within the chamber;
the arrangement being such that, in use, the chamber is filled with material, the pumping means pumps fluid from the chamber to create a sub-atmospheric pressure therein, the variable volume chamber reduces in volume so that external pressure is transmitted to the material within the chamber and no substantial pressure load is carried by the walls of the chamber, and material within the chamber is heated by the heating means to cause vaporization of moisture in



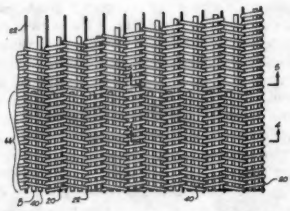
the material at a temperature below the boiling point of water at atmospheric pressure, the vaporized moisture being drawn off by the pumping means.

4,583,302

HELICAL DRYER BELT WITH PROFILED PERMEABILITY

Richard W. Smith, Greenville, S.C., assignor to Wagner Systems Corporation, Greenville, S.C.

Continuation-in-part of Ser. No. 502,255, Jun. 8, 1983, Pat. No. 4,490,925. This application Nov. 2, 1984, Ser. No. 667,904
The portion of the term of this patent subsequent to Jan. 1, 2002, has been disclaimed.
Int. Cl.[4] F26B *13/08*
U.S. Cl. 34—116 **7 Claims**



1. A permeable dryer belt having a profiled permeability across the width of the belt for holding a paper web against heated cylinders in a dryer section of a papermaking machine to dry the paper web, said belt being of the type which comprises a nonwoven helical fabric having an open mesh made from a plurality of elongated helix strips extending in a crosswise direction made from a thermoset synthetic polymeric material, said helix strips including helix windings having upper and lower runs presenting a generally flat paper web contacting surface and curved bend joining the upper and lower runs; pintle means received through a channel formed by intermeshing bend portions of adjacent helix strips to successively joint the helix strips together in a machine direction to provide an endless drive belt of a desired dimension; air flow reduction means formed at opposing lateral edges of said helical belt fabric for obstructing air flow through said open mesh of said belt to define a lateral zone of reduced air permeability at each of said lateral edges; and said belt having an increased permeability through the fabric mesh of a medial portion of said belt between the lateral zones of reduced air permeability for increased drying in the center of the belt and reduced drying at said lateral zones of said belt for uniform drying of said paper web contacted thereby;

an open winding space defined within each winding of each said helix strips, said opening winding spaces being generally aligned crosswise in said fabric; each said open winding space being limited by the ends of said intermeshing bend portions of adjacent adjoining helix strips which define the effective width of said winding space; said air flow reduction means including an elongated monofilament edge filler element extending through said winding spaces of said helix strips in the lateral zones of reduced permeability terminating in free ends at the inner most edges of said lateral zones; and

said monofilament edges filler means including a contoured monofilament edge filler element having a contoured portion which extends laterally over the intermeshing bend portions of adjacent helix strips into corner crevice spaces defined in the corners of said winding spaces.

4,583,303

BUNION BRACE

James A. Laiacona, and Frances M. Laiacona, both of 300 SW. 14 Pl., Boca Raton, Fla. 33432

Filed Jun. 20, 1984, Ser. No. 622,477
Int. Cl.[4] A43B *7/30*
U.S. Cl. 36—95 **3 Claims**

1. A bunion brace, comprising, in combination, a pad assembly for placement inside a shoe, and located between a wearer's bunion and an inner surface of said shoe, and said assembly having self-controlled means for automatically individually adjusting a contour of its one side to fit against said bunion and a contour of its other side to fit against said shoe surface; said means comprising a rigid plastic central plate of a size that is suitable for said bunion, a flexible soft wall adjacent one side of said central plate and a flexible semi-soft plastic wall adjacent an opposite side of said central plate, both said walls being heat-sealed along their edges to a peripheral edge of said plate, a sealed chamber being formed between each said plate side and each said wall, a bleed hole through said central plate for communication of said chambers with each other and a free-flowing vehicle in said chambers for movement through said bleed hole.

4,583,304

BALLET SLIPPER

Murray Spalding, 1552 33rd St., NW., Washington, D.C. 20007

Continuation of Ser. No. 604,932, Apr. 27, 1984, abandoned.
This application Oct. 15, 1985, Ser. No. 787,703
Int. Cl.[4] A43B *5/12*
U.S. Cl. 36—113 **1 Claim**

1. A ballet slipper comprising:

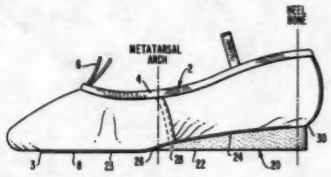
(a). a foot encasing part formed of at least one layer of material, and inner and outer soles having a stiffness allowing a dancer to dance flat or demi-pointe, and between which edges of the material are gathered, the part of the outer sole forward of the metatarsal arch of the foot of the wearer being flat and the part rearward of the arch being upwardly inclined, and

(b). a heel connected to the rearward part of the outer sole and having:

(i). a front end edge extending transversely of the slipper and positioned beneath the part of the slipper underlying the metatarsal arch of the foot,

(ii). a flat lower surface which extends rearwardly from the front end edge of the heel and lies in the plane of that part of the outer sole which is forward of the metatarsal arch,

(iii). an upper surface which is connected to the lower surface of the part of the outer sole which is rearward of the metatarsal arch of the foot and extends upwardly



from the front end edge of the heel and is upwardly convexly curved from the front end edge of the heel for approximately one-third the length of the heel and the remaining part of which is flat and upwardly inclined at an angle of approximately 10°, and

(iv). a vertical rear surface which extends transversely of the heel of the slipper and connects the lower and upper surfaces of the heel and which is positioned beneath the part of the slipper which underlies the heel bone of the foot of the wearer.

4,583,305

SKI BOOT

Yoshiyuki Miyamoto, Nara, Japan, assignor to Nara Sports Co., Ltd., Nara, Japan

Filed Mar. 13, 1985, Ser. No. 711,218
Claims priority, application Japan, Dec. 26, 1984, 59-280168
Int. Cl.[4] A43B *5/04, 7/14*
U.S. Cl. 36—119 **5 Claims**

1. A ski boot comprising:

and outer shell;

and inner boot;

an air pack disposed between said outer shell and said inner boot for fastening the skier's foot with the air contained therein; and

means for automatically and quantitatively controlling the fastening pressure on the skier's foot by controlling the pressure in said air pack;

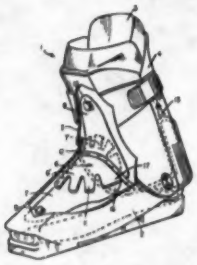
said means comprising an air pump means connected through a valve to said air pack for supplying air into said air pack, a pressure sensor means connected to said air pack for sensing the air pressure in said air pack and giving a signal when the pressure in said air pack is below a preset value, and a control circuit means operative in response to the signal from said pressure sensor means for automatically controlling said valve and said air pump means for maintaining the pressure in said air pack at said preset value.

4,583,306

ALPINE SKI BOOT

Jean Paris, Saint-Jorioz, France, assignor to Salomon S.A., Annecy, France

Filed Oct. 19, 1984, Ser. No. 662,500
Claims priority, application France, Oct. 19, 1983, 83 17107
Int. Cl.[4] A43B 5/04
U.S. Cl. 36—119 58 Claims



1. A ski boot having a bottom and adapted to hold a foot therein, wherein said boot comprises:

(a) holding means for producing a force for holding said foot at said bottom of said boot; and

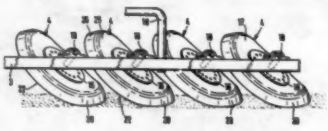
(b) distribution means for distributing said force over said foot, wherein said distribution means comprises at least two overlapping portions, wherein said distribution means further comprises means for varying the longitudinal extent of said two overlapping portions in response to the shape of the foot and/or said force from said holding means.

4,583,307

CLEARING APPLIANCE, ESPECIALLY FOR SNOW CLEARANCE

Eugène Lenert, Biwer, Luxembourg

Filed Mar. 26, 1984, Ser. No. 593,122
Claims priority, application Luxembourg, Apr. 5, 1983, 84731
Int. Cl.[4] E01H 5/06, 5/09
U.S. Cl. 37—233 12 Claims



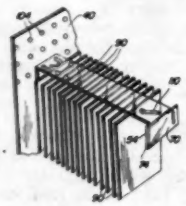
1. Clearing appliance, especially an appliance for clearing snow, comprising: a support frame, at least one clearing element rotatably mounted on said frame and having a concave forward side, said clearing element being driven by ground contact about an axis of rotation when the clearing appliance is advanced in a forward direction of operation, said clearing element being rotatable in a plane inclined forwardly with respect to the ground and oriented obliquely with respect to the forward direction of operation, and said clearing element being fitted with an outer flexible annular ring of rubber-like material comprising a first portion approximately radial to the axis of rotation and a second substantially cylindrical portion having a free edge for ground engagement, said rubber-like material being temporarily deformed in response to engagement with the ground as said clearing element rotates about said axis of rotation such that a significant portion of said free edge always contacts the ground, the axis of rotation of said clearing element forming a selected acute angle both with the ground and the forward direction of operation such that rotational movement is caused by said ground engagement.

4,583,308

DISPLAY FLAG FOR PRICE LABEL AND INVENTORY CONTROL

Ronald H. Taub, Highland Park, Ill., assignor to Taub Family Trust U/A

Filed Jan. 3, 1984, Ser. No. 567,817
Int. Cl.[4] G09F 1/00
U.S. Cl. 40—124.4 1 Claim



1. A display flag for price label, product information, and inventory code use, said display flag being selectively mountable in each of two orientational modes, and comprising:

an elongated, flexible and resilient, substantially self-supporting, positionally-metastable, ribbon-like band,

said band being formed with a plurality of spaced hole-defining means for receiving in substantial registry therethrough ends of cooperating mating prong-like panel-engaging and mounting hook elements of a rod-like hanger bracket,

said hole-defining means including spaced holes in said band for facilitating mounting of said band selectively to project in each of two different orientational modes, said modes including a bracket-bridging first mode in which said band extends in a genrally horizontal plane along a projecting expanse of the bracket, and in which said band overlies the bracket along a lineal expanse of a panel-engaging, panel-supported hanger bracket arm on which articles may be arrayed for promotional display and for end-wise sequential removal, and

a second mode in which said band lies in a vertical plane and extends laterally of and generally parallel to a bracket projecting outwardly of and generally normally to a supporting panel,

band-shortening and band-orientation means for selectively reducing the overall extending length of said band, and for angling said band to orient and to facilitate functional attachment of said band to a wall structure,

said band-shortening and orientation means including score lines extending transversely across said band for defining a series of lineally- disposed segments,

said score lines delineating said segments and constituting fold lines by means of which a selectable, predetermined number of band segments may be pivotally shifted to extend angularly,

indicia-carrying tab means adjacent an outwardly presented zone of said band and integrally formed with sand band for selective recordation of project related information thereon including inventory, pricing data, and product reference information,

said tab means being formed with first and second slot means for securing a cover panel hingedly to overlie said tab means in substantial areal corresponding therewith,

said slot means including first and second slots disposed at marginal edge portions of said tab means and at right angles to one another in said tab means, said first of said slots extending transversely of said band adjacent a junction of said terminal zone of said band with said tab means,

and said second of said slots being formed in an end zone of said tab means and said second of said slots being formed in an end zone of said tab means and paralleling an end edge thereof,

cover panel means for hinged securement to overlie said tab means,

said cover panel means having an areal configuration corresponding to that of said tab means for congruent superimposition thereover,

said cover panel means including integrally formed wing means extending from a pair of edges of said cover panel means, said edges being disposed normally of one another,

said wing means defining first and second wings positioned and oriented for selectively engaging in mating interlocking engagement within corresponding said first and said second slots formed in said tab means to secure said cover panel means in hingedly overlying relationship with said tab means in each of said orientation modes of said band.

4,583,309

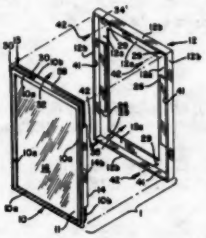
TAMPER-PROOF DISPLAY ASSEMBLY

Michael N. Kane, River Forest, and Lawrence R. Hogan, Lake Villa, both of Ill., assignors to Kane Graphical Corporation, Chicago, Ill.

Filed Aug. 21, 1984, Ser. No. 642,836

Int. Cl.[4] G09F *1/12*

U.S. Cl. 40—152 **24 Claims**



1. A display assembly for accepting a sign or poster sheet or the like for the display thereof comprising:

a shroud-forming frame including attachment means for attaching said shroud-forming frame to a vertical mounting surface, said shroud-forming frame having peripheral walls forwardly extending from forwardly facing vertical surfaces interior to said peripheral walls, said peripheral walls defining an insertion aperture into said shroud-forming frame from the front thereof;

a cover frame having peripheral margins presenting outwardly facing surfaces configured for closely confronting nesting relationship with the interior surfaces of said peripheral walls of said shroud-forming upon insertion of said cover frame into said insertion aperture, said cover frame having rearwardly facing vertical surfaces and a sealed transparent forwardly facing viewing portion forming a window through which a sign or poster sheet behind the same is visible;

retaining means for accepting and holding a poster or sign sheet behind said window;

one of said cover frame and said shroud-forming frame including a first holding means, the other of same including second holding means releasably engaging said first holding means, said first and second holding means being disposed within said assembly to provide a force operating to hold said cover frame in said shroud-forming frame when inserted therein so that said shroud-forming frame completely surrounds the sides of said inserted cover frame to prevent direct access to the rear surfaces of said cover frame, said cover frame and shroud-forming frame being configured to provide a first tool-receiving forwardly opening narrow gap between the confronting portions of said outwardly facing surfaces of said cover frame and said interior surfaces of said peripheral walls of said shroud-forming frame.

4,583,310

SUPPORT DEVICE

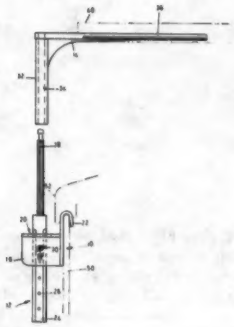
Donald I. Seiler, P.O. Box 56259, Pinegowrie, Randburg, South Africa (2123)

Filed Apr. 24, 1984, Ser. No. 603,390

Claims priority, application South Africa, Aug. 23, 1983, 83/6209

Int. Cl.[4] G09F *21/04*

U.S. Cl. 40—592 **7 Claims**



1. A support device for use on a vehicle, said device including first and second members which are rotatably interconnected, the first member having a channel-shaped formation which is engageable with an upper edge of a side window of the vehicle so that, when the window is raised, the channel-shaped formation is sandwiched between the window and a window surround, the second member including a display mounting portion comprising a generally upwardly extending component which in use at least partly supports display means located outside the vehicle, the second member also including an adjusting portion which is pivotally mounted for rotatable movement relative to the first member only in a plane substantially perpendicular to the longitudinal axis of the vehicle to adjust the generally upwardly extending component to a substantially vertical orientation when the said side window is at an angle to the vertical, and means for selectively vertically positioning the second member with respect to the first member in said plane which is substantially perpendicular to the longitudinal axis of the vehicle.

4,583,311

COMBINED CHANGEABLE SIGN ASSEMBLY

Richard E. Hosey, Pedro, Ohio, and Ervan E. Rich, Florence, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 21, 1985, Ser. No. 704,108

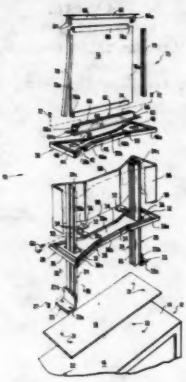
Int. Cl.[4] G09F *7/02*

U.S. Cl. 40—611 **6 Claims**

1. A combined dual placard and looped sign changeable display assembly for mounting to an underlying and generally horizontal support member, said assembly comprising:

a pair of horizontally spaced, in line, vertically upright open facing channel members for fixedly mounting to said underlying support member, a pair of elongated planar base and cap members, a means for mounting said base member and said cap member to and between said upright channel members at spaced vertical positions with the base member underlying said cap member, a first upright display member of endless loop form surrounding said pair of facing channel members and being in edge abutment

with and maintained between said base and cap members, a placard holding frame assembly sized to and vertically mounted at opposed sides within said facing channel members, said placard holding frame assembly including a



vertical upright placard and said placard holding frame assembly having its lower edge in juxtaposition with said cap member and extending the top of the cap member to complete a double element changeable display.

4,583,312

CHANGEABLE SIGN BOARD WITH MAGNETIC CHARACTERS

Edward C. King, and Larry G. Robinson, both of Eugene, Oreg., assignors to King Design, Inc., Eugene, Oreg.

Filed Jul. 18, 1983, Ser. No. 515,377

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.⁴ G09F 7/04

U.S. Cl. 40—621 **15 Claims**

1. A changeable sign comprising:

means defining a continuous support surface;

a plurality of separate segments arrangeable in different patterns on said surface to define different alphanumeric characters;

one of said surface and said segments being magnetic;

the other of said surface and said segments being magnetizable such that said segments can be magnetically adhered to said surface in different desired alphanumeric patterns and selectively removed therefrom;

the segments and support surface having visibly contrasting surfaces so that said characters are visible;

the support surface including index means defining outlines of seven of said segments arranged in a figure-8 pattern for guiding arrangement of the segments to form a numeral, the index means being visible at a first position close to the sign and invisible at a second position spaced from the sign and the first position.

4,583,313

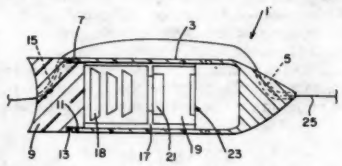
FISHING LURE

Clifton J. Dugan, Jr., 9117 Brady, Dallas, Tex. 75243

Filed May 7, 1984, Ser. No. 607,788

Int. Cl.⁴ A01K 79/00

U.S. Cl. 43—17.1 **7 Claims**



1. A fishing lure for attracting a predetermined species of fish which comprises, in combination,

(a) a waterproof casing,

(b) a sound emitting transducer coupled to said casing, and

(c) electronic means within said casing and coupled to said sound emitting transducer for automatically causing said transducer to emit sounds of plural predetermined frequencies simultaneously.

4,583,314

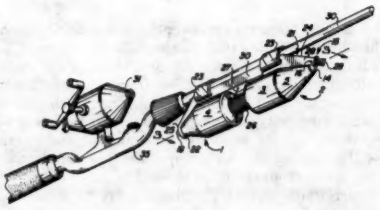
ROD FLOTATION DEVICE

Donald R. Kirkland, 1029 Edgewood Dr., Jacksonville, Tex. 75766

Filed Sep. 19, 1984, Ser. No. 652,112

Int. Cl.⁴ A01K 87/00

U.S. Cl. 43—25 **11 Claims**



1. A rod flotation device for locating and retrieving a submerged object comprising bracket means in cooperation with the object; water soluble retainer means carried by said bracket means; and flotation means normally carried by said bracket means, with said flotation means engaging said water soluble retainer means, whereby said flotation means disengages said bracket means when the object is submerged and said water soluble retainer means deteriorates; said bracket means comprising a base, a rear flange extending from one end of said base in angular relationship, a front flange extending from the opposite end of said base in angular relationship and a bifurcation shaped in said front flange, with said water soluble retainer means spanning said bifurcation;

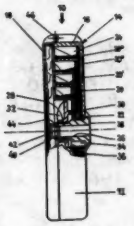
said water soluble retainer means being shaped to define a pin; said flotation device further comprising plunger means biased in one end of said flotation means and a blade provided on said plunger means, said blade normally engaging said pin when said flotation means is carried by said bracket means.

4,583,315

SUPPLY AND DISPENSER DEVICE FOR FISHING LINES AND LIKE THREADS

Hans W. Schreck, Urbachstrasse 32, D-3559 Bottendorf, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,960
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—54.1 **12 Claims**



1. A supply and dispenser device for fishing line leaders comprising in combination:

(a) a casing with a cover and a walled base plate,

(b) a plurality of different diameter reels, each of which includes a circular base and a coil compartment with flanges that extend laterally from the periphery of the base for receiving a leader supply,

(c) bearing means including a central hub for nesting the reels in contacting relation at least along a peripheral line on one side of the walled base plate, the outermost reel having line contact to the inner periphery of the casing,

(d) axially adjustable tensioning means so as to hold the nested reels in a non-rotatory relation to the casing for axially dispensing the leaders,

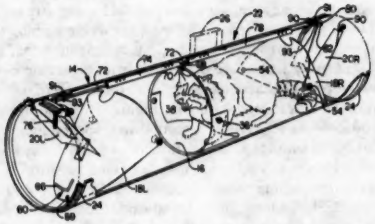
(e) the reels being of successively different height, each such that the innermost reel is lowest and that the outer coil compartment flanges of the nested reels are substantially flush.

4,583,316

ANIMAL TRAP

Thomas H. Holtgrefe, 5447 Phillorett Dr., Cincinnati, Ohio 45239

Filed Sep. 19, 1983, Ser. No. 533,288
Int. Cl.[4] A01M *23/18*
U.S. Cl. 43—61 **17 Claims**



1. An animal trap, said trap comprising:

means for confining said animal, said means for confining having at least one open portion;

at least one means for sealing, said means being located inside said means for containing, said means being located proximate said open portion;

means for locking said means for sealing, said means being located proximate said means for sealing, said means operatively cooperating with said means for sealing;

means for stopping, said means being rigidly affixed to said means for sealing, said means being a right angle member having a triangularly shaped upper flange, said triangularly shaped upper flange operatively cooperates with said means for locking said means for sealing whereby said means for stopping cooperates with said means for locking to form a nonslip connection therebetween;

means for providing clearance for said means for stopping;

means for simultaneously actuating said means for sealing and said means for locking, said means being located inside said means for containing; and

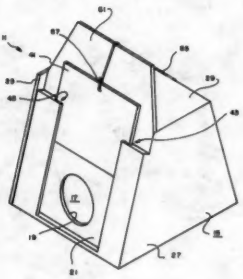
means for controlling said means for sealing and said means for locking, said means for controlling being located within said means for confining, said means for controlling being operatively connected to said means for simultaneously actuating.

4,583,317

ANIMAL TRAP

Chester E. Beard, Rte. 1, Box 357, Hickory Flatt, Miss. 38633

Filed Apr. 22, 1985, Ser. No. 725,647
Int. Cl.[4] A01M *23/20*
U.S. Cl. 43—61 **6 Claims**



1. An animal trap for use with a piece of bait to trap animals, said trap comprising:

(a) a body member having a hollow interior and having an access opening into said hollow interior; said body member including a front member, a back member, a first side member, a second side member, a top member and a bottom member joined together to define said hollow interior; said access opening being located through said front member; said back member of said body means having an aperture therethrough; said front and back members of said body member having planar face surfaces which are angled toward one another with the top ends thereof closer together than the bottom ends thereof, said aperture through said back member consisting of a cylindrical bore with its axis extending at an angle to the horizontal through said back member downwardly into said interior of said body member;

(b) a trap door means movably mounted to said body member for movement between an open position in which said access opening is open and a closed position in which said access opening is obstructed;

(c) trigger means for selectively holding said trap door means in said open position, said trigger means including a bait holding means for holding said piece of bait, said trigger means allowing said trap door means to move to said closed position if said piece of bait is removed from said bait holding means; said bait holding means of said trigger means including a pin member for extending through said aperture through said back member of said

body member, said pin member having a first end for being positioned within said interior of said body member and for holding said piece of bait and having a second end; said trigger means including coupling means for coupling said second end of said pin member to said trap door means and for holding said trap door means in said open position as long as said first end of said pin member is positioned within said interior of said body member, said first end of said pin member being held within said interior of said body member only as long as said piece of bait remains thereon for causing said trap door to automatically move to said closed position if said piece of bait is removed therefrom; said aperture through said back member of said body member being shaped so as to insure the quick exit of said pin member therefrom if said piece of bait is removed from said first end of said pin member; and

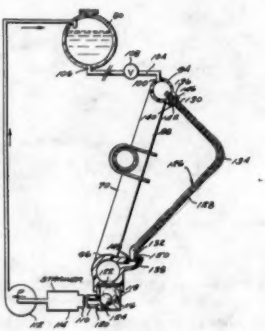
(d) guide means attached to said front member adjacent said access opening for guiding said trap door means between said open and closed positions.

4,583,318

APPARATUS AND METHOD FOR DIRECT APPLICATION OF TREATMENT LIQUID TO GROWING VEGETATION

John W. Richardson, and John S. Richardson, both of Rte. 3, Box 81, Colfax, La. 71417

Filed May 10, 1983, Ser. No. 493,263
Int. Cl.[4] A01C *00/00*; B05C *1/00*; B05B *15/00*
U.S. Cl. 47—1.5 **22 Claims**



1. Apparatus for directly applying treating liquid to growing vegetation in a field or the like, comprising:

at least one generally vertically oriented applicator rod means having a substantially non-porous, exposed external surface capable of supporting a falling film of treating liquid having a free liquid surface on said substantially non-porous, exposed external surface, this at least one rod means being arranged to be moved through a field of growing vegetation at a level above ground level so as to be in position to brush said free liquid surface against such growing vegetation as is to be treated;

a reservoir for treating liquid;

first conduit means effectively extending from said reservoir to the vicinity of the respective said external surface of each said applicator rod means, with such juxtaposition as to flow treating liquid onto said external surface without substantial splashing or spraying;

upwardly opening collecting trough means effective spacedly enclosingly receiving a lower end portion of each said rod means for collecting as drainage therefrom substantially all of such of the treating liquid as has run down the external surface of that rod means without having been removed therefrom by brushing against growing vegetation;

second conduit means communicated with said collecting trough means for recovering collected treating liquid from said collecting trough means;

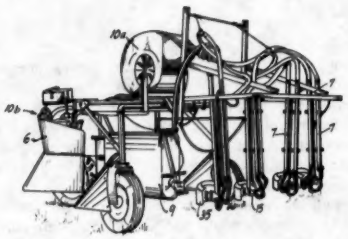
and pumping means effectively incorporated in the circuit including the reservoir, the first conduit means, said external surface of each said rod means, the collecting trough means and the second conduit means for forwarding treatment liquid along at least one segment of said circuit.

4,583,319

METHOD OF AND APPARATUS FOR SPRAYING FOLIAR COMPOSITION

Robert L. Wolff, Carbondale, Ill.; Dennis G. Watson, East Lansing, Mich., and John G. Clapp, Jr., Greensboro, N.C., assignors to Arcadian Corporation, Parsippany, N.J.

Filed Jun. 27, 1985, Ser. No. 749,430
Int. Cl.[4] A01C *15/04*; B05B *9/06*
U.S. Cl. 47—1.7 **30 Claims**



1. A method of spraying liquid composition onto foliage of vegetation, comprising in combination: (a) spraying in at least one of lateral and rearward directions a liquid composition as a solid flat spray stream at a liquid pressure ranging from about 10 to about 75 pounds per square inch from an orifice of a spray nozzle along a longitudinal first axis toward and onto foliage of vegetation; while advancing about the foliage and substantially horizontally to ground level at a forwardly rate of speed of about 1 to 10 miles per hour; (b) concurrently directing a gas as gas streams from gas vents in directions substantially the same as said spraying of said spray stream such that said directed gas intersects and impinges upon said liquid composition as the liquid composition is sprayed-away-from the spray nozzle whereby amount and uniform distribution of spray of the composition onto top and bottom surfaces of foliage of vegetation is enhanced by greater deposits more uniformly distributed, said directing being from at least two spaced-apart locations on substantially opposite sides of said spray stream positioned to form spaced-apart separate non-circumscribing barriers on opposite two sides of said spray stream such that particles of said spray stream are prevented from diverging beyond said two opposite barriers, each said directing of said gas stream being at a directing angle ranging from about zero to about 50 degrees relative to a second axis spaced-away from and parallel to said longitudinal first axis of said spray stream; said spray stream at said spray nozzle having an orifice cross-sectional area ranging from about 0.0000948 square inches to about 0.00323000 square inches; and said directing of said gas streams including positioning gas vents from which said gas streams flow, with each gas vent having at least oppositely-spaced-apart baffles each extending a distance of from about 1 to about 12 inches, each said baffle ranging relative to said second axis, from about zero to about 20 degrees in a direction of the opposing baffle of the same gas vent, and angles of said directing being such that each said gas-stream impinges upon said spray stream at a distance of from about five to about fifteen inches distant from said orifice.

4,583,320

DELIVERY SYSTEM FOR MERISTEMATIC TISSUE

M. Keith Redenbaugh, Davis, Calif., assignor to Plant Genetics, Inc., Davis, Calif.

Continuation-in-part of Ser. No. 433,688, Oct. 12, 1982. This application Oct. 25, 1983, Ser. No. 545,678
Int. Cl.[4] A01C 1/06
U.S. Cl. 47—57.6 14 Claims

1. A method for delivering meristematic tissue to an environment for growth and development comprising:

isolating meristematic tissue substantially free of intact seed coat, which tissue has the potential to differentiate to produce an entire plant body; and

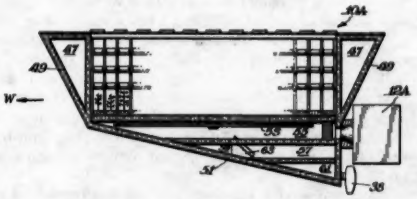
encapsulating said isolated meristematic tissue together with at least one adjuvant capable of affecting the meristematic tissue, the resulting plant body or the environment, in a hydrated gel capsule.

4,583,321

SPACE GARDEN

Lawrence E. Stanhope, c/o Connolly and Hutz, P.O. Box 2207, Wilmington, Del. 19899-2207

Filed Apr. 12, 1984, Ser. No. 599,704
Int. Cl.[4] A01C 1/00
U.S. Cl. 47—58 15 Claims



1. In a method of growing plants comprising transporting a space garden into space by flying the space garden in a western direction at generally the same speed as the earth rotates in an eastern direction to a location between the earth and the sun, maintaining the space garden between the earth and the sun whereby the earth rotates on its own axis below the space garden while the space garden remains between the sun and the rotating earth with the space garden being in perpetual sunshine, providing a plurality of horizontal growing levels in the space garden with one level being adjacent the top wall of the space garden to receive light therethrough and thereby comprise a light growing area and with the remaining levels being for dark growing, and periodically rotating plants to and from the light and dark growing areas.

4,583,322

ORNAMENTAL CONTAINER AND DISPLAY ASSEMBLY FOR A SEEDLING PLANT

Robert A. Dimich, 4160 Hardie Rd., Coconut Grove, Fla. 33133

Filed Dec. 14, 1984, Ser. No. 681,813
Int. Cl.[4] A01G 9/02
U.S. Cl. 47—66 16 Claims

1. A container and mounting assembly designed for support and display of a seedling, primarily a containerized seedling-type plant on a tree structure, said assembly comprising:

(a) a housing including a container means for containment and display of a live seedling plant therein and a mounting means for securing said housing to a tree structure,

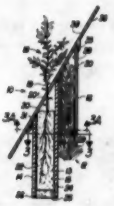
(b) said container means including a compartment being dimensioned and configured to maintain a growth media therein and accommodate a root system of the seedling therein,

(c) said compartment including a longitudinal dimension sufficient to accommodate substantially vertically downward growth the seedling root system therein,

(d) said compartment having a longitudinal dimension at least as great as an anticipated elongated dimension of the seedling root system necessary to foster growth without causing upturning of the root system within said compartment,

(e) said mounting means disposed adjacent to said container means and comprising a substantially hollow interior portion dimensioned and configured to receive a trunk portion of the tree structure therein,

(f) a first opening formed in said compartment and disposed and dimensioned for extension of the seedling outwardly therethrough from the interior of said compartment,



(g) a second opening formed in said mounting means in communicating relation to said hollow interior portion and disposed and dimensioned for passage of the trunk portion therethrough into said hollow interior portion, said hollow interior portion of said mounting means having an end portion adjacent said first opening,

(h) decoration means structured for asthetic enhancement of said housing and disposed to extend outwardly from said housing in a viewable, exposed orientation, and

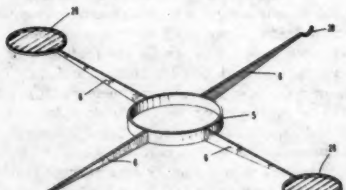
(i) said decoration means structured and configured for cooperative disposition relative to said first opening, the seedling extending outwardly in viewable relation to a front of said decoration means, whereby the seedling and said decoration means may be readily viewable simultaneously.

4,583,323

HORTICULTURAL APPARATUS FOR ROTATING POTTED PLANTS AND HANGING BASKETS

J. W. Graves, Springfield, Tenn. 37172; Harold Tate, Jr., and John U. Cook, both of Cottontown, Tenn. 37048

Filed Dec. 21, 1984, Ser. No. 685,059
Int. Cl.[4] A47G 7/02
U.S. Cl. 47—67 7 Claims



1. A horticultural apparatus for rotating plants housed in at least one of a flower pot planter and a hanging basket planter, said apparatus comprising:

a support base having a top, a side, and a connecting means substantially centered on said top;

a housing rotatably supported on said top, including an

upper platform having an aperture substantially centered therein and a peripheral support wall attached to and extending downward from the outer perimeter of said platform along the outside of said side a distance less than the vertical length of said side, said aperture being coaxially aligned with said connecting means for accessing said connecting means, said support wall including a lower portion;

an outwardly extending lip secured about said lower portion of said peripheral support wall;

rotating means in said support base, communicating with said housing for rotating said housing about said support base;

means detachable from said housing for supporting said flower pot planters and hanging basket planters, said supporting means being positioned about the peripheral support wall and resting on said lip; and

hanging means detachably connected to said connecting means for attaching said base to an overhead support.

4,583,324

APPARATUS FOR CONTROLLING THE CLOSING SEQUENCE OF DOUBLE LEAVED DOORS

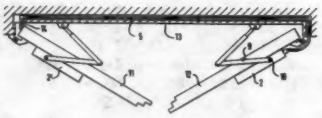
Regina Storz, Stuttgart; Fritz Feucht, Renningen, and Ralf Storandt, Leonberg, all of Fed. Rep. of Germany, assignors to GEZE GmbH, Leonberg, Fed. Rep. of Germany

Filed Jul. 3, 1984, Ser. No. 627,661

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1983, 3329543

Int. Cl.⁴ E05C *7/06*

U.S. Cl. 49—367 **9 Claims**



1. Apparatus for controlling the closing sequence of double doors, the apparatus comprising at least one door closer associated with the leading door and a control arrangement which cooperates with the door closer for the leading door and is actuated via the trailing door, characterized in that the control arrangement consists of a positioning member (**14**), which is arranged in the pivot end region of the trailing door (**11**) and is movable by the trailing door between first and second switching positions, and of at least in part of a Bowden cable (**5,5'**) which is connected with the positioning member (**14**), which extends up to the door closer (**2**) for the leading door (**12**) and which mechanically transmits the movement of the positioning member; and in that the leading door end of the Bowden cable (**5,5'**) acts on a control member (**3**; **18**; **16**; **26**; **29**, **30**) which blocks the closing movement of the door closer (**2**) in one of the two switching positions of the positioning member (**14**); there being provided a control member (**8**; **18**; **29**) associated with the Bowden cable (**5,5'**) which is biased into the blocking position by means of a spring.

4,583,325

GRINDING MACHINE

Shuji Tabuchi, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki and Disco Abrasive Systems, Ltd., Tokyo, both of, Japan

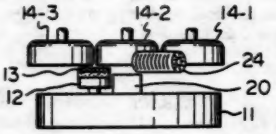
Continuation of Ser. No. 529,670, Sep. 6, 1983, Pat. No. 4,481,738, which is a continuation of Ser. No. 257,472, Apr. 24, 1981, abandoned. This application Oct. 17, 1984, Ser. No. 661,809

Claims priority, application Japan, Apr. 24, 1980, 55-54721

The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.

Int. Cl.⁴ B24B *9/00*

U.S. Cl. 51—5 R **13 Claims**



1. A grinding machine for grinding a surface of a thin plate-like workpiece, comprising:

a rotating table provided with at least a workpiece holder, said workpiece holder including a body mounted on said table and a top plate attached to said body, said body and top plate being associated with each other to define a hollow interior portion, said top plate being porous and having a top flat surface on which the workpiece is placed and held, said workpiece holder being not able to move in the direction of the axis of rotation of the table, and the surface of said top plate protruding above the surface of said table;

vacuum means having a suction end member connected to and communicating with the interior hollow portion of said holder for providing said holder with vacuum suction for holding the workpiece to the surface of said top plate; and

a plurality of cup-shaped grinding wheels having different grain sizes ranging from coarse to fine, the grinding wheels being disposed above the table in a circular arrangement with respect to the axis of rotation of the table and located in different axial positions with respect to the axis of rotation of the table, wherein, as the table continuously rotates, the surface of the workpiece held to the surface of the top plate is successively ground by a first grinding wheel to a last grinding wheel so that a desired total thickness is ground and a desired surface finish is obtained in one rotation of the table.

4,583,326

ABRADING MACHINE FOR ABRADING A WELDED SEAM IN AN ELONGATED WORKPIECE

Kikuo Tanaka, Ono, and Isomi Washio, Odawara, both of Japan, assignors to Amada Company, Limited, Japan

Continuation of Ser. No. 589,995, Mar. 15, 1984, abandoned. This application Aug. 1, 1985, Ser. No. 761,668

Int. Cl.⁴ B24B *21/00*

U.S. Cl. 51—81 R **6 Claims**

1. An abrading machine, comprising:

two abrading means;

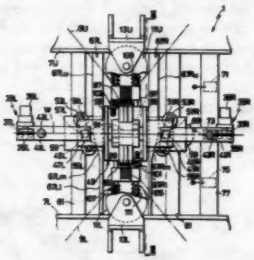
a carrier member so provided the abrading means as to be movable toward and away from the abrading means;

gripping means for holding a workpiece:

means for supporting the gripping means mounted on the carrier member so as to be located on opposite sides of the abrading means;

workpiece supporting means provided on the carrier member to support the workpiece being abraded; and

means for pivotally swinging the gripping means supporting means with respect to the carrier member in the direction



of movement of the carrier member as the carrier member is moved toward and away from the abrading means.

4,583,327

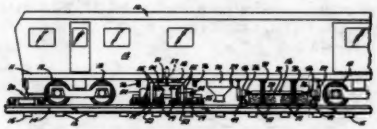
RAIL GRINDING CAR

Hans P. Jaeggi, Lugano, Switzerland, assignor to Jackson Jordan, Inc., Ludington, Mich.

Filed Nov. 25, 1983, Ser. No. 555,275

Int. Cl.⁴ E01B *31/17*

U.S. Cl. 51—178 **8 Claims**



1. A railroad track rail grinding car comprising, in combination, a frame supported on flanged wheels for running on railroad track, a first subframe mounted on said frame for movement from a raised travel position to a working position near a rail, a plurality of vertical grinding stones mounted on said first subframe for contacting and grinding the upper level of the rail, said vertical grinding stones having their axes canted from right angles of the rail so that stone-rail contact is not perpendicular to the centerline of the rail head, a second subframe mounted on said frame for movement from a raised travel position to a working position near said rail, a plurality of horizontal grinding stones mounted on said second subframe for contacting and grinding the head of said rail, means for individually positioning the grinding angle of each of said horizontal stones in planes normal to the rail, said vertical grinding stones defining a grinding path and said first subframe including an elongated resilient beam, an actuator coupled to lugs on the opposite ends of said beam for bending the beam in a horizontal plane so as to horizontally curve said grinding path, and a second actuator coupled to lugs on the opposite ends of said beam for bending said beam in a vertical plane so as to vertically curve said grinding path.

4,583,328

APPARATUS FOR HIGH TOLERANCE POLISHING OF A WORKPIECE SURFACE

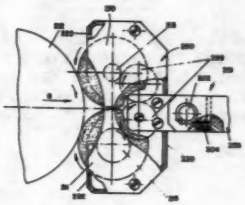
Itzchak Lapsker, Givatayim, Israel, assignor to GAL International Industries Inc., Forest Hills, N.Y.

Continuation-in-part of Ser. No. 114,297, Jan. 22, 1980, Pat. No. 4,361,987, which is a continuation-in-part of Ser. No. 832,623, Sep. 12, 1977, abandoned. This application Jun. 9, 1982, Ser. No. 386,673

Claims priority, application Israel, Oct. 29, 1976, 50794

Int. Cl.⁴ B24B *5/00*

U.S. Cl. 51—251 **6 Claims**



1. Apparatus for effecting high tolerance finishing of a workpiece surface comprising:

a mounting member including attachment means suitable for attachment to rotary drive apparatus for rotation of the mounting member;

a plurality of resilient abrasive finishing elements each of which is rotatably mounted on said mounting member for motion relative to said workpiece surface in a plane substantially perpendicular to the plane of rotation of said mounting member; and

transmission means coupled between said finishing elements for causing said finishing elements to move at different surface speeds with respect to each other in a predetermined relationship; and

wherein the resilient and abrasive substances of said finishing elements are selected in order to provide in said workpiece a surface finish of 2–4 microinch rms.

4,583,329

HIGH PRESSURE JETS

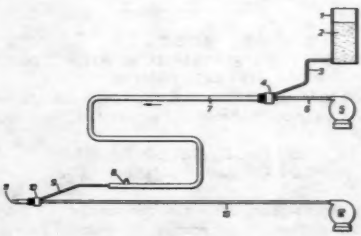
Howard J. Lang, Swindon, England, assignor to Water Research Centre, Swindon, England

Filed Feb. 7, 1985, Ser. No. 699,199

Claims priority, application United Kingdom, Feb. 9, 1984, 8403428; Aug. 10, 1984, 8420429

Int. Cl.⁴ B24C *7/00*

U.S. Cl. 51—410 **10 Claims**



7. Apparatus for providing a high pressure jet, comprising a liquid having finely divided solid abrasive particles dispersed therein, at a substantial distance from sources of said liquid and said abrasive respectively, which apparatus comprises a first

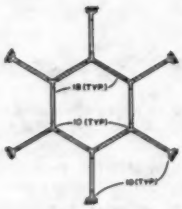
venturi, a first conduit for delivering liquid under pressure over said distance from said source to said first venturi; a second venturi means for delivering gas under pressure to said second venturi; a source of particulate abrasive; means connecting said source to said second venturi to allow said abrasive to be drawn into admixture with said gas therein; a separator for separating solids from the carrier gas; a second conduit, for delivering said abrasive in said carrier gas over said distance from said second venturi to said separator; a third conduit for delivering said abrasive from said separator to said first venturi; a nozzle for producing a high pressure jet; and means for supplying the mixture of liquid and abrasive formed in the venturi to said nozzle.

4,583,330

MODULAR INFLATABLE DOME STRUCTURE

Yen T. Huang, 3629 W. Miller Rd., Garland, Tex. 75041

Division of Ser. No. 937,483, Aug. 28, 1978, Pat. No. 4,288,947.
This application Jul. 27, 1981, Ser. No. 287,438
Int. Cl.[4] E04B *1/32*
U.S. Cl. 52—2 **4 Claims**



1. A modular dome structure comprising:

a plurality of uniform rigid Y shaped joint members, each of said joint members having three branch portions, said branch portions including means for connecting said joint members to substantially uniform length frame members;

a plurality of uniform length frame members connected at their opposite ends, respectively, to a branch portion of one of said joint members to form a framework made up of said joint members and said frame members, said frame members being each formed as a tubular member of flexible material capable of being vulcanized to increase the rigidity of said member whereby the stability of said framework is increased, and said dome structure is stabilized upon erection with said joint members and said frame members by inflating said frame members with a pressure gas while connected to said joint members, said pressure gas including a sulphur containing gas which is reactive with the material of said frame members to increase the rigidity of said frame members by vulcanization of the material of said frame members.

4,583,331

FRAME SUPPORTED STRUCTURE WITH TENSIONED FABRIC PANELS

Rowland D. Hunt, and Kenneth Gardner, both of Santa Barbara, Calif., assignors to Clamshell Partners Ltd., Santa Barbara, Calif.

Filed Dec. 27, 1983, Ser. No. 565,854
Int. Cl.[4] E04B *1/347*; E04F *10/02*
U.S. Cl. 52—2 **43 Claims**

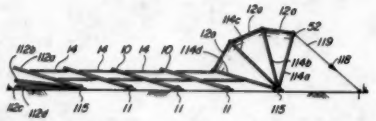
1. A frame supported structure comprising;

ground plate means extending in two parallel lines to form support surfaces in each line spaced a predetermined distance apart and fixedly fastened to the ground;

a plurality of spaced frames extending up from said ground plate means to form a plurality of arched spans, the frames pivotally attached at their ends to said ground plate means such that said ends are spaced apart by said predetermined distance;

each frame having a transverse cross-section including a web section extending in a direction parallel to the plane of the frame span; a flange at the outer end of the web section extending laterally on each side at the outer end of the web section; and an enclosed groove extending the length of the frame on each side of said web section at said flange, a slot extending through a wall of each groove to provide communication therewith;

a fixed length rigid spacer connected between adjacent frames, said rigid spacer being pivoted to said adjacent



frames and having a length equal to said predetermined distance such that said adjacent frames and said rigid spacer form an articulated parallelogram with said ground plate means and such that said adjacent frames can be pivoted about said ground plate means and always remain parallel to each other;

a fabric panel extending between each pair of adjacent frames, each panel including a beaded edge along each side, the beaded edges being positioned in said grooves and the panel extending through said slots;

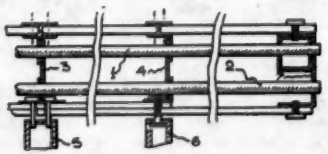
tensioning means extending lengthwise in each panel and adapted to tension said panels after attachment of said panels to said frames.

4,583,332

GABLE OVERHANG

William G. Hitchins, New Cascade Road, Fiddawn, Norfolk Island (2899)

Filed Jul. 23, 1985, Ser. No. 758,084
Claims priority, application Australia, Jul. 23, 1984, 6166/84
Int. Cl.[4] E04B *1/34, 7/02*
U.S. Cl. 52—73 **5 Claims**



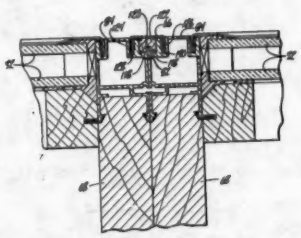
1. An overhanging gable structure, comprising a plurality of brackets each one of which is mounted atop a stud of a frame of a building so as to be disposed between a top plate of an outside wall of the said building and the line of rafters of a roof thereof; apertures formed in each said bracket; and a plurality of tubular metal members extending in spaced-apart relationship through said apertures so that the longitudinal axis of each said tubular metal member is disposed horizontally and parallel to the said outside walls; the arrangement being such that, while the fixed ends of said tubular metal members are held in the apertures in the said brackets, free ends of the said tubular metal members are cantilevered out from said building to terminate, in like spaced-apart relationship, in housings mounted beneath said roof frame so as to provide support for a said overhanging gable.

4,583,333

ROOM ADDITION CONSTRUCTION

Mearl Minter, Oskaloosa, Iowa, assignor to Rolscreen Company, Pella, Iowa

Continuation-in-part of Ser. No. 270,822, Jun. 5, 1981, abandoned. This application Dec. 10, 1982, Ser. No. 448,634
Int. Cl.[4] E04B 7/02; E04C 1/34
U.S. Cl. 52—90 29 Claims



1. A room structure for attachment to the exterior wall of a building, comprising:

an upright frame assembly mounted on a foundation adjacent said wall and including an elongated outer wall frame portion spaced outwardly from said wall, a pair of spaced apart side wall frame portions extending between said wall and said outer wall frame portion at each end thereof, and a roof frame portion extending between said wall and said outer wall frame portion at the upper end thereof and between said side wall frame portions at the upper ends thereof,

means for securing said frame assembly to said building,

a plurality of structurally independent glazing panel units securely mounted within at least one of said frame portions,

means for securing adjacent panel units to each other, including an elongated glazing flange mounted on the edges of each panel unit such that said flanges of adjacent units abut one another along their lengths to form an open mastic channel between the abutting flanges for receiving mastic, and a mullion cover lockingly engaging said flanges and covering said mastic channel,

said glazing flange including an upper wall, a lower wall, and opposite side walls extending between said upper and lower walls, a pair of lower legs extending from said lower wall for attaching said flange to said panel unit, a first arm extending upwardly from one of said side walls, a second arm spaced inwardly from the other of said side walls and extending upwardly from said upper wall, and a rib extending upwardly from the other of said side walls so as to form a recess between said rib and said second arm.

4,583,334

MODULAR CARRIER FOR STAIR TREAD

Robert M. Hubbard, 115 Rusty Gans Dr., Panama City Beach, Fla. 32407

Continuation-in-part of Ser. No. 342,182, Jan. 25, 1982, abandoned. This application Mar. 21, 1984, Ser. No. 591,935
Int. Cl.[4] E04F 11/12
U.S. Cl. 52—98 7 Claims

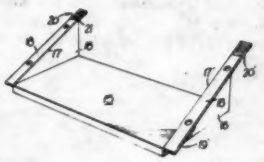
1. A modular carrier for suspending a stair tread from a pair of stringers comprising in combination:

a bottom tread;

a pair of side walls extending vertically from each end of said bottom tread including a top edge forming a predetermined angle with said bottom tread;

each of said top edges having a mounting plate attached thereto, said mounting plate lying in a plane which is parallel to said top edge and tilted at said predetermined angle with respect to said bottom tread;

each of said mounting plates including an extended portion extending beyond an upper end point of said top edge, and



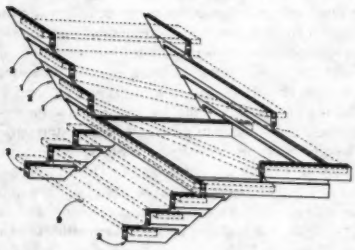
each of said mounting plates including notched joining means at each end thereof for attaching each respective end of said mounting plate at one of a plurality of selectable discrete positions along said mounting plate to a like mounting plate on an adjacent like modular carrier.

4,583,335

READY-TO-ASSEMBLE STAIRCASE SYSTEM FEATURING MODULAR COMPONENTS

Franco Morellini, Rolo, Italy, assignor to Mobirolo S.p.A., Italy

Filed Apr. 26, 1984, Ser. No. 604,320
Claims priority, application Italy, Jun. 17, 1983, 40059 A/83
Int. Cl.[4] E04F 11/00
U.S. Cl. 52—182 15 Claims



1. A staircase assembly, which comprises:

a plurality of modular components paired one with the next in sequence to provide a bearing structure for a staircase framework;

each of said modular components being slotted with the next in reciprocal fashion, and being formed from a length of molding having basically an elongated-type cross section which remains substantially constant throughout, and having a main longitudinal axis which lies horizontally disposed following assembly;

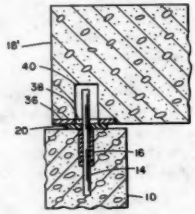
means for joining pairs of the modular components in reciprocal fashion and in a variety of reciprocal positions, the modular components including a first component having at least one vertical face, and a second component having two mutually-opposed inwardly-set vertical faces between which said first component is partially inserted to mate the first component with the second component, said joining means being formed on the at least one vertical face of the first component and on at least one of the faces of the second component to substantially inhibit reciprocal movement of either of the first and second components in any direction other than parallel to the horizontal axes of the individual moldings which form the mated first and second components.

4,583,336

JOINT OF PREFORMED CONCRETE ELEMENTS

Donald R. Shelangoskie, Richmond Heights; Jack H. Brown, Mentor; Eric K. Jacobsen, Chagrin Falls; Patrick A. Masterson, Mayfield Heights; Ricky A. Pierce, Mentor; Barry A. Rogers, South Euclid, and Lawrence J. Valentine, Chagrin Falls, all of Ohio, assignors to The Austin Company, Cleveland, Ohio

Filed Oct. 29, 1984, Ser. No. 666,179
Int. Cl.[4] E04B *1/16*
U.S. Cl. 52—250 12 Claims



1. An improved connection of precast concrete elements comprising at least two precast cementitious concrete structural elements disposed in close load transferring positions, at least one metal pin extending from within one of said elements to within the second of said elements, said metal pin being held in place in each of said elements by a structure of the group consisting of (1) being cast in place in said cementitious concrete element, (2) being disposed in a grout hole which has been filled with a cementitious grout and (3) being disposed in a pocket formed behind a slotted plate affixed to said element which restricts movement in all but one direction, said metal pin being held in place in at least one of said elements by a structure of the class consisting of (1) and (2), and said metal pin having an elastic grommet disposed between a portion of the pin and the surrounding cementitious concrete or grout in one of the elements wherein said pin is held in place by a structure of the class consisting of (1) and (2), said elastic grommet being disposed on the portion of said pin immediately adjacent the joint between said two elements and between a portion of the pin and the adjacent cementitious concrete or grout through which a load is to be transferred from one element to the other.

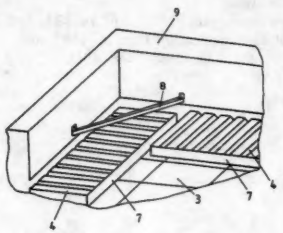
4,583,337

FLAT ROOF STRUCTURE

H. Carl B. Kramer, and Hans-Joachim Gerhardt, both of Aachen, Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Filed May 24, 1985, Ser. No. 737,610
Claims priority, application Fed. Rep. of Germany, May 25, 1984, 3419658
Int. Cl.[4] E04H *12/28*
U.S. Cl. 52—302 9 Claims

1. A flat roof comprising a substructure, panel-shaped insulating elements loosely positioned on the substructure, and at least one corrugated cover member of a substantially rigid material positioned on the insulating elements at least adjacent to an outer peripheral region of the roof, said corrugated cover member having channels, and said cover member being positioned on the insulating elements such that the channels extend in a direction from an outer perimeter of the roof towards the center portion of the roof, and wherein said channels form downwardly facing portions which are open at their ends facing toward the outer perimeter of the roof and which are



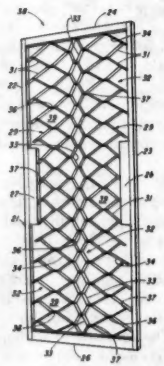
closed at their ends facing toward the center portion of the roof.

4,583,338

DOOR PANEL CONSTRUCTION

James D. Sewell, 5005 Yarrow Ct., Fair Oaks, Calif. 95628, and Norman E. Gordon, 7743 Claypool Way, Citrus Heights, Calif. 95610

Filed Sep. 9, 1983, Ser. No. 530,561
Int. Cl.[4] E04C *2/36;* E06B *3/74;* B32B *3/12*
U.S. Cl. 52—456 4 Claims



1. A door panel construction comprising:

a. a rectangular frame, including a pair of side members parallel to each other, and upper and lower end members also parallel to each other, all of said members being of substantially the same predetermined thickness, having their faces lying in parallel planes, and being joined respectively at the frame corners;

b. a structural void filler disposed within said frame, said void filler including a plurality of individual strips extending substantially between said pair of side members and having uninterrupted parallel edges establishing a filler depth substantially equal to said predetermined thickness, said strips being formed and respectively interconnected to define a plurality of quadrangular cells having upper and lower apexes and lateral corners, said quadrangular cells including brace cells and lateral cells, said brace cells having a shorter apex to corner cell wall dimension than the corresponding apex to corner cell wall dimension of said lateral cells and being assembled apex to apex in a centrally positioned line extending longitudinally from said upper end member to said lower end member, said lateral cells extending between said brace cells and said

side members, said corners of said lateral cells being interconnected to a respective adjacent one of said brace cells, said brace cells being adapted to resist greater edgewise compressive forces than said lateral cells; and

c. a pair of sheet panels, abutting and secured to the opposite faces of said frame and to said parallel edges of said strips.

4,583,339

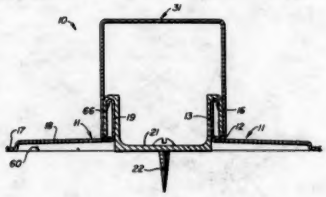
ROOFING AND SIDING SYSTEM

Donald P. Cotter, 18516 - 142nd Ave., NE., Bldg. G, Woodinville, Wash. 98072

Filed Dec. 13, 1982, Ser. No. 449,027

Int. Cl.[4] E04D 1/36; E04C 1/34

U.S. Cl. 52—466 **1 Claim**



1. A roofing and siding system for mounting to a building surface comprising:

a plurality of longitudinal pans having substantially flat central panels, for mounting against the building surface, and lateral borders, the borders including upwardly extending pan legs having short rolled upper lips and border panels tapering upwardly and outwardly away from the building surface as said border panels extend from the central panel to the pan legs, the length of the rolled upper lips being substantially less than the length of the pan legs;

a longitudinal hold-down bracket having a base for mounting to the building surface, upwardly extending inner legs and downwardly extending outer legs defining a bracket slot between the outer and inner legs sized for receipt of the pan legs therein, the outer legs extending a substantial distance past the rolled outer edges of the pan legs and defining a bottom flange gap between the outer legs' distal ends and the underlying border panels; and

a longitudinal batten cap sized to cover the hold-down bracket and pan legs, the batten cap having opposed, laterally extending, single thickness flanges positioned for mounting within the batten flange gap, the batten flange gap sized for complementary mating engagement of the single thickness flanges therein with the flanges occupying a substantial portion of the batten flange gap.

4,583,340

FIXTURE SUPPORT CLIP FOR SUSPENSION CEILING GRID SYSTEMS

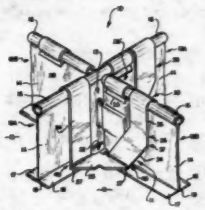
Gale E. Sauer, North Olmsted, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed May 3, 1984, Ser. No. 606,531

Int. Cl.[4] E04B 5/52; E04C 2/42

U.S. Cl. 52—484 **19 Claims**

1. A suspension ceiling grid system comprising a plurality of interconnected runners providing web means and opposed flanges extending from the one edge of said web means, connectors interconnecting said runners at intersections, said runners cooperating to define at least one grid opening bounded by said flanges, separate support clips secured to said runners near said intersections bounding said opening providing support shelves substantially coplanar with said flanges and projecting into said opening beyond said flanges wherein said support shelves are carried by and between first and second posts, said first post removably attached to a first runner and said second post removably attached to a second runner and a fixture positioned in said opening providing a peripheral surface overlying and supported by both said flanges and said



support shelves, said support shelves extending inwardly along said peripheral surface beyond said flanges to increase the lateral extent of supporting overlay of said fixture.

4,583,341

INTERLOCKING GROUND COVERING ELEMENTS AND ARRANGEMENTS OF THEM FOR MECHANICAL LAYING

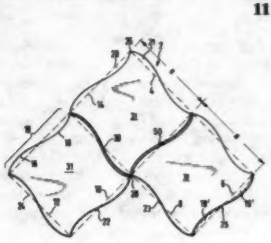
Günter Barth, Bühlertal, and Fritz von Langsdorff, Förch über Rastatt, both of Fed. Rep. of Germany, assignors to F. von Langsdorff Bauverfahren GmbH, Rastatt, Del.X

Filed Apr. 19, 1982, Ser. No. 369,539

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 8112270[U]

Int. Cl.[4] E04C 1/10

U.S. Cl. 52—589 **11 Claims**



1. Modular elements of substantially uniform configuration layable side-by-side to form ground covering or load bearing pavements, each of said elements consisting essentially of a unitary rigid body substantially larger in horizontal dimensions than it is thick and bounded peripherally by two generally right angularly related inner sides each extending from an end thereof to , and meeting the other at an inner angle apex, two generally right angularly related outer sides each extending from an end thereof to, and meeting the other at an outer angle apex, and two front sides each extending between the respective ends of a said inner side and a said outer side;

said body having formed in and across its top side two dummy joint gaps each of which extends substantially as a continuation of one of said inner sides from said inner angle apex to a midpoint between half sections of one of said outer sides;

said inner sides, said front sides, said half sections of said outer sides and said dummy gaps being of substantially the same length and of substantially the same longitudinal configuration with each having at least one longitudinal portion thereof projecting outside and at least one longitudinal portion thereof recessed inside an imaginary straight base line between the ends thereof, so that said top side appears visually to be composed of three substantially indentical four-sided elemental units disposed side by side

with the respective opposite side configurations of each elemental unit parallel to each other and any one of said elements will mate and interlock laterally at all its peripheral sides with sides of others of said elements, yet will present with them substantially the same pavement surface appearance, in any of a variety of side-by-side orientations of the elements.

4,583,342

SECUREMENT OF GLASS IN FIRE DOORS AND THE LIKE

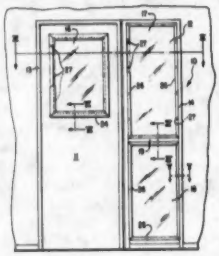
Clifford S. Lier, 923 Wentworth Avenue, North Vancouver, B.C., Canada

Division of Ser. No. 448,621, Dec. 10, 1982, abandoned. This application Feb. 21, 1984, Ser. No. 581,613

Claims priority, application Canada, Dec. 11, 1981, 392121

Int. Cl.[4] E06B *3/00*

U.S. Cl. 52—714 **13 Claims**



1. In a fire barrier for a building wherein said barrier comprises at least one panel of heat resistant glass having non-metallic glazing bars at its periphery, the improvement comprising a plurality of heat-resistant rigid metal clips each comprising a thin flat base and a pair of flat projections upstanding from said base arranged parallel to each other and separated by a distance corresponding to the width of said glass panel, said clips securing the glass panel in the fire barrier beneath said glazing bars with their bases securely attached to the barrier and the glass panel held between said flat projections.

4,583,343

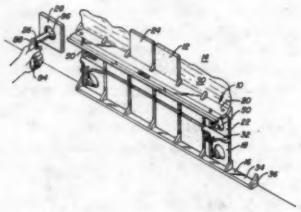
TILE SETTING KIT

Dariel R. Camp, 2153 Morello Ave., Pleasant Hill, Calif. 94523

Filed Sep. 15, 1983, Ser. No. 532,402

Int. Cl.[4] E04D *15/00*

U.S. Cl. 52—749 **21 Claims**



1. Apparatus for setting tile comprising:

a tile fence having an elongated frame structure with a straight edge of width corresponding to a desired grout space, and a plurality of teeth spaced along said straight edge the length of tiles to be set, said teeth being perpendicularly disposed to said straight edge and of width corresponding to a desired grout space; and, support means for supporting said frame structure with respect to set tiles wherein said straight edge and teeth are disposed at the grout space to provide a guide for additional tiles to be set adjacent the set tiles; wherein said means for supporting said frame structure comprises a brace structure connected to said frame structure with contact means comprising a suction pad for contacting and engaging set tile.

4,583,344

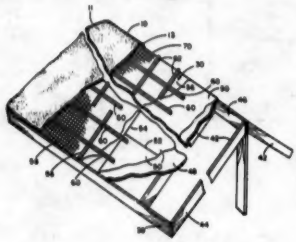
SIMULATED THATCHED ROOFING

Delica M. Butler, 33762 Via De Aqua, San Juan Capistrano, Calif. 92675

Filed Jun. 6, 1984, Ser. No. 617,705

Int. Cl.[4] E04B *1/00*

U.S. Cl. 52—750 **18 Claims**



1. A simulated thatched roof formed of:

(a) a supporting roof structure including a roof frame formed with rafters and base underlayment; and

(b) a natural fiber outer covering laid over said frame and base underlayment comprising:

(i) a coextensive sheet of woven fibers; and

(ii) a plurality of discontinuous loops of a natural, bast or leaf fiber with cut loop ends exposed to form tuffs woven into said sheet of woven fibers to provide a continuous surface of exposed cut loop fiber ends.

4,583,345

AUTOMATIC PACKAGING, MEASURING AND PRICING MACHINE

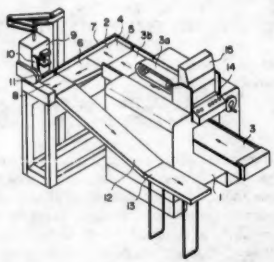
Yukihiro Hirosaki, Shizwoka; Manabu Nishida, Aokihigashi, and Kunikazu Sekioka, Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1984, Ser. No. 646,063

Claims priority, application Japan, Aug. 31, 1983, 58-159745; Aug. 31, 1983, 58-159746

Int. Cl.[4] B65B *57/02, 61/26*

U.S. Cl. 53—77 **4 Claims**



1. An automatic packaging, measuring and pricing machine which includes an automatic packaging machine and an automatic measuring and pricing machine integrated with said

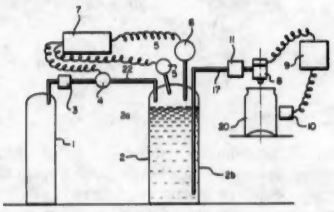
automatic packaging machine, characterized in that, in setting of PLU data of said automatic measuring and pricing machine, a cutting length data for detecting cutting length of a packaging film on said automatic packaging machine is set while included in PLU data so that the film cutting length may be automatically set upon PLU operation.

4,583,346

METHOD AND APPARATUS FOR PRESSURIZING CONTAINERS

Toshinori Kameda, Ishioka, Japan, assignor to National Can Corporation, Chicago, Ill.

Filed Jul. 19, 1983, Ser. No. 515,334
Int. Cl.[4] B65B *55/00*
U.S. Cl. 53—431 **4 Claims**



3. An apparatus for injecting liquid nitrogen into a can containing a product not containing carbon dioxide, comprising in combination:

a liquid nitrogen containing tank, having a head space connected to a gaseous nitrogen source;

an injection nozzle adapted to inject said liquid nitrogen into a can which contains a product not containing carbon dioxide;

a supply line adapted to supply therethrough said liquid nitrogen from said liquid nitrogen containing tank to said injection nozzle utilizing a positive pressure in said head space in said liquid nitrogen containing tank;

means for detecting pressure in said head space in said liquid nitrogen containing tank, said pressure being determinant to injection rate of said liquid nitrogen into said can;

means for controlling said pressure in said head space within a small predetermined range in response to an electric signal from said detecting means such that a substantially constant pressure is maintained in the headspace of said reservoir, said control means comprising a first valve operative to supply gaseous nitrogen from said gaseous nitrogen source into said head space to thereby increase said pressure therein, a second valve operative to release gaseous nitrogen in said head space to thereby reduce said pressure therein, and a pressure control unit for selectively operating said first and second valves in response to said electric signal to maintain a substantially constant predetermined injection rate;

a gas/liquid separator provided in said supply line between said liquid nitrogen containing tank and said injection nozzle for separating gasified nitrogen from said supply line;

a sensor for detecting the presence of said can and generating an electric signal when said can is present; and,

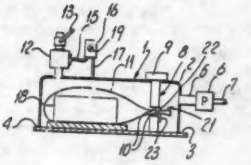
a timer operated in response to said signal from said sensor to control duration of injection of liquid nitrogen into said can.

4,583,347

VACUUM PACKAGING APPARATUS AND PROCESS

Broder Nielsen, Hagenkamp, Fed. Rep. of Germany, assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Continuation of Ser. No. 433,600, Oct. 7, 1982, abandoned. This application Jun. 11, 1985, Ser. No. 743,871
Int. Cl.[4] B65B *31/02*
U.S. Cl. 53—434 **1 Claim**



1. A process for vacuum packaging an article in a flexible receptacle comprising:

(a) loading the article in the receptacle and placing the loaded, unsealed receptacle in a vacuum chamber having a single chamber;

(b) closing the chamber and extracting gas at a substantially constant rate therefrom to lower the pressure surrounding the receptacle thereby causing the receptacle to balloon away from the receptacle while also extracting gas from the unsealed receptacle;

(c) continuing the extraction of gas at a constant rate from the chamber while admitting gas to the chamber to raise the pressure surrounding the receptacle in a pressure restoration phase after the pressure has been initially lowered, said pressure restoration phase beginning at a predetermined pressure difference between the pressure surrounding the receptacle and the pressure within the receptacle;

(d) subsequently, increasing the rate of admitting gas to the chamber to a rate greater than the constant continuing rate of extraction thereby causing the receptacle to collapse around the article; and,

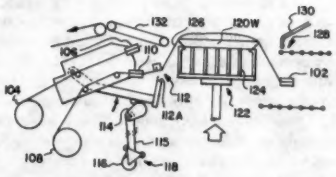
(e) sealing said receptacle as the receptacle collapses upon the article.

4,583,348

EXTENDED FILM DRAW FOR FILM WRAPPING MACHINE

Fritz F. Treiber, Centerville, and Dallas A. Margraf, Spring Valley, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Aug. 10, 1984, Ser. No. 640,053
Int. Cl.[4] B65B *41/14, 49/00, 11/16*
U.S. Cl. 53—441 **6 Claims**



1. In a package wrapping machine for wrapping packages of varying girth dimensions in film sheets by elevating said packages into said film sheets, an improved method for drawing sheets of film wrapping material into said machine from a continuous source of said film wrapping material comprising the steps of:

feeding packages of varying girth dimensions to a wrapping station in random succession;

gripping the leading edge of said film at an edge-engaging position;

pulling said leading edge of said film to an edge-extension position to pull a predetermined length of film into said wrapping station;

elevating said packages into said film to produce stress within said film to thereby pull additional film from said source of film wrapping material if necessary to accommodate girth dimensions of said packages presented to the wrapping station;

clamping and severing the trailing edge of the film pulled from said source only after elevating said packages into said film to form a sheet of said film of appropriate length for the package girth to be wrapped;

wrapping the girth of the selected package at the underside thereof; and

delivering the wrapped package from said wrapping station.

4,583,349

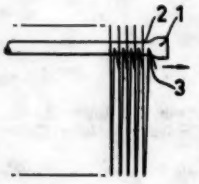
METHOD OF STORING HANDLE BAGS

Erik Kramming, Saltsjöbaden, Sweden, assignor to Bengt Lundin AB, Arvika, Sweden

Continuation of Ser. No. 27,847, Apr. 6, 1979, abandoned, which is a continuation of Ser. No. 586,693, Jun. 13, 1975, abandoned, which is a division of Ser. No. 415,854, Nov. 14, 1973. This application Mar. 3, 1980, Ser. No. 126,283

Int. Cl.⁴ B65B *43/26*

U.S. Cl. 53—459 **3 Claims**



1. A method of supporting, dispensing and packing a bundle of bags one at a time, each of said bags having a first handle opening located on one side of the bag and a second handle opening located on the opposite side of the bag, aligning the first handle opening of each bag with the first handle opening of every other bag in the bundle, the second handle opening of each bag being arranged out of complete alignment with said aligned first handle openings, supporting said bundle of bags by a supporting member, providing said supporting member with means to inhibit but not prohibit the removal of at least each first handle opening therefrom, and arranging the second handle opening of each bag closer to the discharge end of the supporting member than the first handle opening of said same bag, whereby the first bag of said bundle can be opened by grasping said second handle opening and said bag can be filled with the objects to be packed in the bag,

said second handle opening only partially surrounding said supporting member.

4,583,350

PROCESS AND DEVICE IN PARTICULAR FOR SEALING CONTAINERS WITH A FOIL OR THE LIKE MATERIAL

Aldo Artusi, Mühleboden 66, CH-8461 Trüllikon, and Peter Hagmann, Bielstr. 95, CH-4500 Solothurn, both of Switzerland

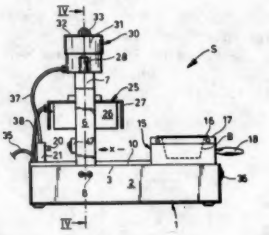
PCT No. PCT/EP83/00083, § 371 Date Nov. 21, 1983, § 102(e) Date Nov. 21, 1983, PCT Pub. No. WO83/03397, PCT Pub. Date Oct. 13, 1983

PCT Filed Mar. 22, 1983, Ser. No. 568,205

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210566

Int. Cl.⁴ B65B *51/14, 7/28*

U.S. Cl. 53—478 **18 Claims**



1. A process for sealing containers with a foil or the like material using a device having a heating facility mounted on a carrier with a counterpart between the heating facility and carrier and an electromagnetic field between the carrier and counterpart, which comprises: providing a device with a heating facility and with a heating element, pressing said heating element onto the container with said foil or the like material laid on said container, mounting the heating facility on a carrier, installing a counterpart between the heating facility and carrier, generating an electromagnetic field between carrier and counterpart by means of which field the carrier and counterpart are drawn together, as a result of which the heating facility moves away from the counterpart and towards the container to be sealed.

4,583,351

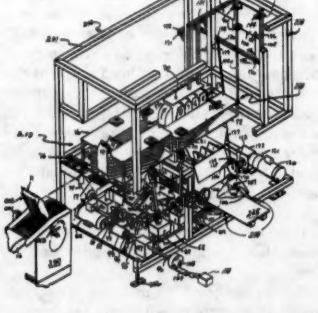
AUTOMATIC CASE PACKING APPARATUS

David M. Fallas, 7000 Imperial Dr., Waco, Tex. 76710

Filed Mar. 21, 1984, Ser. No. 591,732

Int. Cl.⁴ B65B *35/44, 57/20*

U.S. Cl. 53—501 **5 Claims**



1. An apparatus for automatically collecting and packing a selected number of units of vertically oriented frangible prod-

uct into a carton, the product being supplied to the appratus in a vertical orientation in units, one at a time, comprising:

(a) a frame;

(b) a collecting assembly mounted to the frame, including collecting support means for indexing forward, counting and collecting a row of such units of product in a vertical orientation until a selected number of units of such product is collected, the collecting support means including:

(i) a pair of opposing side belts comprised of high surface friction material, the opposing side belts being disposed to receive and frictionally support a row of such units of frangible product between them;

(ii) means for driving the opposing side belts in synchronized movement;

(iii) detection means for detecting the arrival of a unit of frangible product between the opposing side belts; and

(iv) controller means operatively associated with the drive means and the detection means for actuating the drive means to index forward the side belts as each unit of frangible product is supplied to the side belts until a selected number units of frangible product are supplied and, once a selected number of units of frangible product are gathered, for actuating the drive means to advance the selected number of units to a feed station and

(c) a feed station operatively aligned with the collecting support means such that the feed station receives the row of collected product from the collecting support means upon advancement by the side belts, the feed station including:

(i) a door pivotally mounted to the frame to pivot between a vertical open and a horizontal closed position;

(ii) indexing means for positioning the row of product onto the door; and

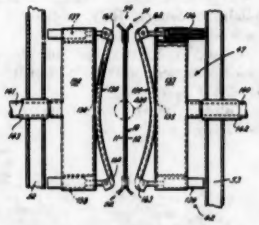
(iii) actuation means for selectively pivoting the door between the horizontal closed position for the positioning of the group of product thereon and the vertical open position to allow the passages of the product by gravity through the door.

4,583,352

APPARATUS AND METHODS FOR AUTOMATICALY HANDLING ASEPTIC FITMENTLESS POUCH

J. Richard Heron, Danville, Calif., assignor to FranRica Mfg. Inc., Stockton, Calif. and Container Technologies, Inc., Barrington, Ill.

Filed Jul. 14, 1983, Ser. No. 514,148
Int. Cl.[4] B65B *51/12, 51/14*
U.S. Cl. 53—570 **15 Claims**



1. In combination, filling means, and apparatus for engaging, opening and closing a flexible walled pouch to be filled by said filling means, wherein said apparatus comprises:

two opposed vacuum jaw means including normally curved resilient porous members disposed opposite and spaced from one another and having respective adjacent ends;

a stretching foot means disposed proximate each end of each said resilient member, each said foot means being disposed adjacent and spaced from the foot means of said opposed resilient member such that said respective opposed foot means at each end of the resilient members are closer to each other than are central portions of said normally curved resilient members;

said respective opposed foot means being normally spaced apart for receiving a pouch therebetween;

both said vacuum jaw means being mounted for motion toward and away from each other for engaging and stretching a pouch; and

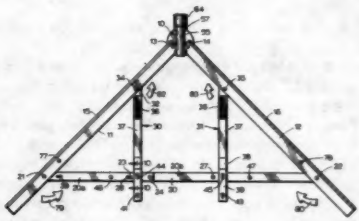
said foot means, upon converging motion of said opposed jaw means, for engaging a pouch before said resilient members engage said pouch, said opposed foot means at adjacent ends of said resilient members being operable to move away from opposed foot means at other adjacent ends of said resilient members to stretch said pouch therebetween.

4,583,383

UNDERWATER WEED CUTTER

Richard L. Shaver, 5101 Fairview Ave. North, Crystal, Minn. 55429

Continuation-in-part of Ser. No. 555,145, Nov. 25, 1983, abandoned. This application Sep. 14, 1984, Ser. No. 650,779
Int. Cl.[4] A01D *44/00*
U.S. Cl. 56—8 **31 Claims**

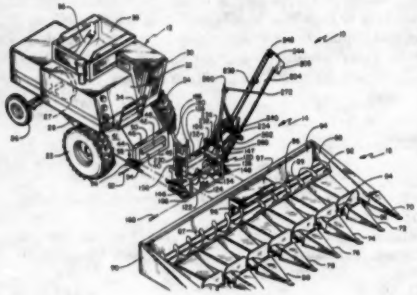


1. For cutting weeds adjacent to the bottom of a body of water, an underwater weed cutter comprising a front mounting member for being pulled through the water, a first and a second elongated cutter member that each has a front end portion, a rear end portion, a leading cutting edge and a trailing edge opposite the leading edge, first means mounting the cutter members front end portions on the the mounting member for pivotal movement relative to one another to permit the cutter members being pivoted to positions of different diverging relationships relative to one another, including a weed cutting position in diverging relationship at a given angle, a first and a second runner that each has a first and a second end portion, second means for pivotally attaching the first runner first end portion to the first cutter member in spaced relationship to the first means, third means for pivotally attaching the second runner first end portion to the second cutter member in spaced relationship to the first means, and fourth means for retaining the cutter members at least substantially at said given angle of diverging relationship and maintaining the runners substantially parallel to one another, and alternately permitting the cutter members being pivoted relative one another and the first and second runners being pivoted about the third and fourth means relative to the first and second cutter memers respectively, said fourth means including transversely elongated brace means having an intermediate portion in removable association with the runners rear portions for releasably retaining the runners substantially parallel to one another, a first end portion, a second end portion, a first fastener for attaching the brace means first end portion to the first cutter member on the opposite side of the third means from the first means and a second fastener for attaching the brace means second end portion to the second cutter member on the opposite side of the fourth means from the first means.

4,583,354
CORN HARVESTER COMBINE ASSEMBLY WITH CORN REMOVAL ATTACHMENT

Norman P. Kraci, W. Highway 20, Box 9-B, O'Neil, Nebr. 68763

Filed Jan. 18, 1985, Ser. No. 692,512
Int. Cl.[4] A01D *45/00, 41/00, 61/00*
U.S. Cl. 56—16.6 16 Claims



1. A corn harvesting combine assembly for harvesting ear corn comprising:

(a) detachable corn head means positioned at a forwardmost portion of the combine assembly for removing corn ears from planted corn stalks, said detachable corn head means having a plurality of forwardly extending gathering members positionable between rows of corn to be harvested and having a plurality of power driven snapping means positioned between associated pairs of gathering members for snapping corn ears from corn stalks received between said gathering members, said corn head means having power driven corn head conveying means for conveying the corn ears removed from the corn stalks by said snapping means to a central rearwardly positioned opening in said corn head means for subsequent removal from said corn head means;

(b) detachable ear corn removal means attachable to a rear portion of said detachable corn head means for receiving ear corn from said corn head means; said ear corn removal means having a power driven removal conveyor means for conveying ear corn received from said corn head means to a transport vehicle such as a wagon;

(c) combine means attachable to a rear end portion of said detachable corn head means in a corn processing mode of operation and attachable to a rear end portion of said detachable corn removal means in an ear corn removal mode of operation for selectively supporting and transporting said corn head means and said corn removal means and for driving said power driven components of said corn head means and said corn removal means, said combine means having a pair of forwardly mounted drive wheels and a pair of rearwardly mounted steering wheels, said combine means having an ear corn processing assembly for removing corn husks from the ear corn, shelling the ear corn, segregating the shelled corn and removing of husks, cobs and debris from said combine means; said ear corn processing assembly having a forwardly positioned opening for receiving ear corn from said corn head means in said corn processing mode of operation and said opening being blocked from receiving ear corn by a rearward portion of said corn removal means in said ear corn removal mode of operations;

(d) said combine means having a power drive means for driving said power driven components of said corn head means in said corn processing mode of operation and for driving said power driven components of both said corn head means and said corn removal means in said ear corn removal mode of operation;

(e) said combine means having a forward attachment portion attachable to a rear attachment portion of said corn head in said corn processing mode of operation and attachable to a rear attachment portion of said corn removal means in said ear corn removal mode of operation;

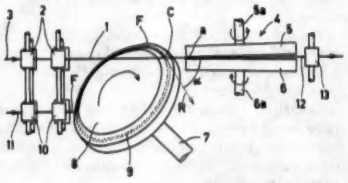
(f) said detachable ear corn removal means having a forward attachment portion attachable to said rear attachment portion of said corn head in said ear corn removal mode of operation;

(g) said detachable ear corn removal means being an integral unit of relatively compact size.

4,583,355
PROCESS FOR THE SPINNING OF FIBERS AND A DEVICE FOR CARRYING OUT THE PROCESS

Louis Vignon, Geneva, Switzerland, assignor to Heberlein Hispano S.A., Vernier/Geneve, Switzerland

Filed May 18, 1984, Ser. No. 611,834
Claims priority, application Switzerland, May 18, 1983, 2697/83
Int. Cl.[4] D02G *3/38*
U.S. Cl. 57—5 12 Claims

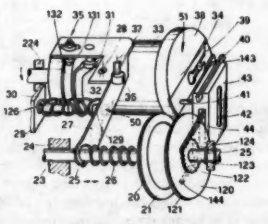


1. A process for spinning fibers, comprising moving a core thread in an axial direction, imparting a twist to the core thread with a twister thereby to rotate the core thread, feeding oriented parallel fibers to the core thread in front of the twister in a direction forming an acute angle with the axial direction of movement of the core thread, and wrapping the fibers under tension on the rotating core thread.

4,583,356
SPLICER DEVICE TO DISASSEMBLE AND RECOMPOSE YARN MECHANICALLY

Roberto Badiali, Pordenone, Italy, assignor to Officine Savio S.p.A., Pordenone, Italy

Filed Nov. 3, 1982, Ser. No. 438,734
Claims priority, application Italy, Nov. 4, 1981, 83492 A/81; Nov. 4, 1981, 83495 A/81
Int. Cl.[4] B65H *69/06;* D01H *15/00*
U.S. Cl. 57—22 18 Claims



1. Splicer device to disassemble and recompose yarn mechanically comprising facing disk means to untwist and retwist mechanically two yarns positioned between said disk means,

means to eliminate excessive tail ends of yarn protruding from said disk means, adjustable means to set said disk means in rotation, means to actuate said means that eliminate the excessive tail ends, means providing a variable, elastic thrust which can be defined momentarily between said disk means, and actuation means which cooperate at least partly with one single programmed actuation means.

11. Splicer device to disassemble and recompose yarn mechanically comprising facing disk means to untwist and retwist mechanically two yarns positioned between said disk means, means to eliminate excessive tail ends of yarn protruding from said disk means, adjustable means to set said disk means in rotation, means to actuate said means that eliminate the excessive tail ends, means providing a variable, elastic thrust which can be defined momentarily between said disk means, actuation means which cooperate at least partly with one single programmed actuation means and fiber-entangling means inserted between said counter-rotating disks so as to act on said fibers to cause mutual penetration of the fibers of the untwisted yarns, said entangling means being equipped with suitable replacement means within the space between said counter-rotating disks, one of said counter-rotating disks defines a hole made coaxially therein and each counter-rotating disk defines an annular chamber therein, said means causing mutual penetration being located in said hole and annular chamber.

4,583,357

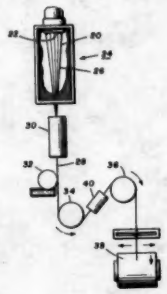
PARTIALLY ORIENTED NYLON YARN AND PROCESS

John M. Chamberlin; Edward W. Chilvers, Jr.; Walter J. Nunning, and John H. Southern, all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 554,021, Nov. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 546,127, Oct. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 488,490, Apr. 25, 1983, abandoned. This application Apr. 2, 1984, Ser. No. 594,522

Int. Cl.[4] D02G 3/02

U.S. Cl. 57—243 17 Claims



1. A nylon 66 apparel yarn suitable for false-twist texturing, said yarn having:

(a) a denier between 15 and 250;

(b) a normalized SAXS peak intensity of at least 1.3; and

(c) a normalized lamellar dimensional product of at least 1.3.

4,583,358

ROVING-BOBBIN FEEDER FOR SPINNING MACHINE

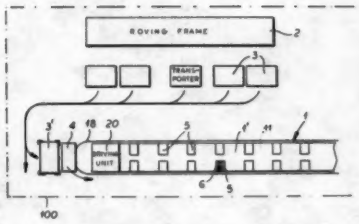
Eberhard Krieger, Kirchheim; Günter Schulz, and Wolfgang Igel, both of Ebersbach, all of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Mar. 18, 1983, Ser. No. 476,546

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210329; Dec. 15, 1982, 3246463

Int. Cl.[4] D01H 9/02, 9/10, 9/18

U.S. Cl. 57—281 8 Claims



1. In a spinning machine provided with a multiplicity of working positions wherein rovings produced in a preparatory stage are drawn from active bobbins mounted on holders of a supply rack, the combination therewith of:

a carriage provided with retaining means for transporting roving-laden replacement bobbins from said preparatory stage to a holding station;

a service unit programmed to move repeatedly past said working positions and said holding station; and

transfer means on said service unit programmed to grip and thereby pick up at least one replacement bobbin at a time from said retaining means and deliver same to a storage area in the vicinity of said holders, said storage area being divided into a multiplicity of zones each associated with at least one working position, further comprising sensing means aboard said service unit for detecting a vacant zone in need of a replacement bobbin, said transfer means being controlled by said sensing means for delivering a pick-up replacement bobbin to such a vacant zone, said retaining means comprising a plurality of pegs loadable at said preparatory stage with respective replacement bobbins, said transfer means comprising an endless conveyor with outwardly projecting stems alignable with said pegs and grasping means engageable with a bobbin on any of said pegs for shifting same onto a stem aligned therewith.

4,583,359

PROFILE TUBES FOR THE PRODUCTION OF READILY ASSEMBLED AND DISMANTLED STRUCTURES

Hans Staeger, Schönbuch, Fed. Rep. of Germany, assignor to Octanorm-Vertriebs-Gesellschaft mit beschrankter Haftung fur Bauelemente, Filderstadt, Fed. Rep. of Germany

Filed Nov. 23, 1984, Ser. No. 674,123

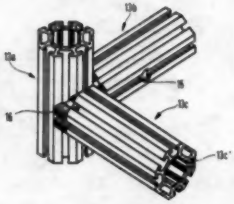
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1983, 3342616

Int. Cl.[4] E04C 3/30

U.S. Cl. 52—721 1 Claim

1. In a framework comprising at least first and second octagonal profile tubes, and a clamping element interconnecting said first and second profile tubes, said clamping element including a clamping end and a mounting end of non-square rectangular cross-section, said profile tubes each being hollow and including internal surface means defining a longitudinal internal space, eight longitudinal grooves spaced around the outer circumference of each profile tube, said grooves including undercut portions which receive said clamping end of the clamping element, the internal space of said profile tube longi-

tudinally receiving said mounting end of said clamping element, said mounting end including a hole for receiving a pin projecting through a recess in an associated one of said grooves, said surface means including longitudinally extending, parallel recesses spaced circumferentially apart, there being four sets of said recesses arranged symmetrically relative to a longitudinal center plane of said inner space, each set of recesses comprising a first pair of recesses and a second pair of corresponding recesses disposed generally diametrically oppo-



site said first pair of recesses, said first and second pairs of recesses being arranged to form a non-square rectangular opening corresponding to said cross-section of said mounting end for longitudinally receiving said mounting end of the clamping element and preventing rotation of the clamping element within said profile bar, said sets of recesses being spaced apart by 45 degrees to receive the clamping element in four different orientations, with said hole facing a respective one of said grooves in each of said four orientations.

4,583,360

ELECTRONIC FUEL CONTROL SYSTEM FOR GAS TURBINE

Charles F. Nick, Lufkin, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 481,089, Mar. 31, 1983, Pat. No. 4,506,504. This application Oct. 29, 1984, Ser. No. 665,830

Int. Cl.[4] F02C 9/28

U.S. Cl. 60—39.03 **6 Claims**

1. A method for monitoring gas turbine operating temperatures and rotational velocity for producing one of a group of fuel control signals for controlling the fuel input rate to the gas turbine, comprising the steps of:

monitoring a plurality of turbine inlet temperatures through respective sensors for said gas turbine,

averaging said turbine inlet temperatures to produce an average turbine inlet temperature signal,

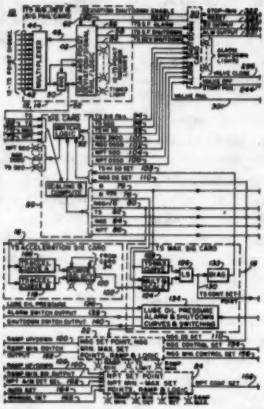
monitoring a gas generator inlet temperature sensor of said gas turbine for producing a gas generator inlet temperature signal,

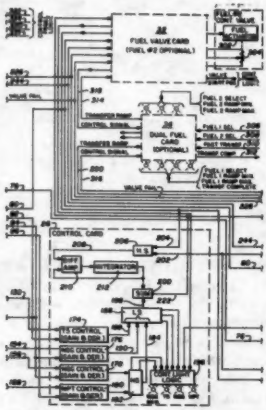
generating a speed signal proportional to the rotational velocity of said gas turbine,

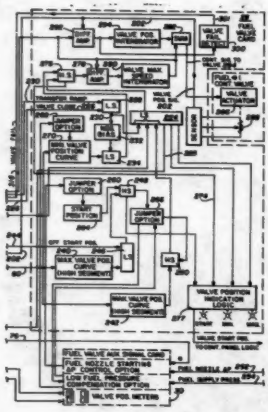
combining said gas generator inlet temperature signal with said speed signal to produce a first function signal,

applying said first function signal to a stored data set to produce a second function signal, said stored data set related to performance characteristics of said gas turbine, and

comparing said turbine inlet temperature signal to said second function signal to produce a difference signal there-







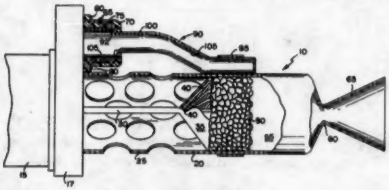
from, said difference signal serving as a fuel control signal for said gas turbine.

4,583,361

HEATER PROTECTION OF THRUSTERS

Joseph E. Genovese, East Granby, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 2, 1983, Ser. No. 557,556
Int. Cl.[4] F02C 3/20, 7/26; F24H 3/00
U.S. Cl. 60—39.462 3 Claims



1. A thruster comprising a chamber for the decomposition of a propellant, means for injecting said propellant into said chamber and a nozzle for exhausting decomposed propellant from said chamber, said thruster being provided with a heater for heating said propellant to enhance the decomposition thereof and characterized by:

said heater being disposed distally from said chamber at a location substantially unheated thereby; and

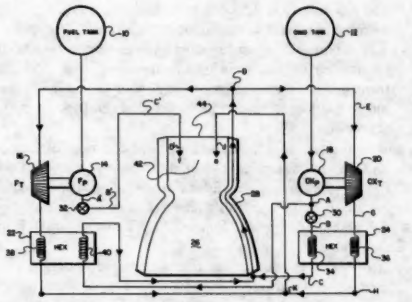
means connecting said heater with said chamber for transporting heat unidirectionally from said heater to said chamber, thereby minimizing the transport from said chamber to said heater of heat released by an exothermic decomposition of said propellant within said chamber.

4,583,362

EXPANDER-CYCLE, TURBINE-DRIVE, REGENERATIVE ROCKET ENGINE

William R. Wagner, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 560,674, Dec. 12, 1983, abandoned.
This application Apr. 22, 1985, Ser. No. 725,150
Int. Cl.[4] F02K 9/00
U.S. Cl. 60—259 10 Claims



1. In a heat-regenerative, expander-cycle turbine drive for a rocket engine having a combustor, an oxidizer tank, an oxidizer turbine, an oxidizer pump and a cooling jacket around said engine, wherein oxidizer fluid, being of the type described by the general formula N_xO_y where x and y are integers, is passed from the oxidizer tank through the oxidizer pump, through the cooling jacket where the oxidizer fluid is heated to a high temperature, and through the oxidizer turbine as a driving fluid, the improvement comprising:

a heat-exchanger having a heat-donor coil in heat exchange relationship with a heat-donee oil, wherein said donor coil is connected between the oxidizer turbine and the engine combustor for receiving said driving fluid and wherein said donee coil is connected between the oxidizer pump and the cooling jacket for receiving the oxidizer fluid from the oxidizer pump, said driving fluid providing heat to the donor coil to raise the temperature of the oxidizer fluid in the donee coil, the oxidizer pump raising the oxidizer pressure above its supercritical pressure value, said donor coil, donee, coil, and oxidizer pump being so arranged and adapted that the supercritical pressure value is maintained until the oxidizer fluid is introduced into the engine for combustion and the supercritical temperature value is reached before the oxidizer fluid enters said oxidizer turbine; and

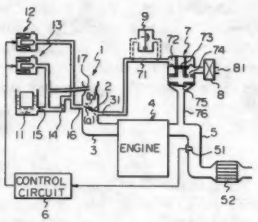
means coupled to receive the oxidizer fluid from the donee coil, pass it through the cooling jacket of the engine for further heating, and feed it to the turbine for driving the turbine.

4,583,363

SECONDARY AIR SUPPLY CONTROL DEVICE IN INTERNAL COMBUSTION ENGINE

Masahiro Urushidani, Toyota, and Hidemi Oonaka, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 449,743, Dec. 14, 1982, abandoned.
This application Sep. 5, 1985, Ser. No. 773,511
Claims priority, application Japan, Dec. 16, 1981, 56-201458
Int. Cl.[4] F02B 75/10
U.S. Cl. 60—276 6 Claims



1. A device for controlling the supply of secondary air in an internal combustion engine, comprising:

three-way catalyst type means for cleaning engine exhaust gas in an engine exhaust pipe;

an O_2 sensor in the engine exhaust pipe;

means for supplying secondary air to the engine exhaust pipe;

control circuit means for receiving the output signal of said O_2 sensor and producing a control signal for air-bleeding control valves of an engine carburetor;

secondary air control means having a secondary air control valve, a reed valve, a by-pass aperture for allowing a small amount of air to by-pass the secondary air control valve, and means for controlling said secondary air control valve in accordance with the opening degree of a throttle valve of said carburetor, such that, when the opening degree of said throttle valve is small, said secondary air control valve is opened to supply a large amount of secondary air, while when the opening degree of said throttle valve is large, said secondary air control valve is closed, allowing only a small amount of secondary air flow through said by-pass aperture; and

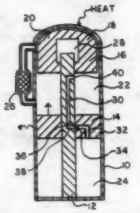
wherein said secondary air control means further comprises negative pressure delay means for delaying actuation of said secondary air control valve upon the beginning of engine deceleration.

4,583,364

PISTON CENTERING METHOD AND APPARATUS FOR FREE-PISTON STIRLING ENGINES

James G. Wood, Albany, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Aug. 19, 1985, Ser. No. 766,793
Int. Cl.[4] F02G 1/04
U.S. Cl. 60—520 9 Claims



5. In a free piston Stirling engine of the type having a housing support containing a reciprocating piston and displacer driven by the alternate expansion and compression of a working gas in a work space of the engine and also having a bounce space, an improved apparatus for preventing the creep of the mean piston position from the leakage of working gas between the work space and the bounce space, the apparatus comprising:

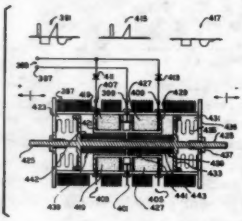
a passageway formed through said engine between said working space and said bounce space, said passageway including at least one valve means linked to the piston for opening the valve means for a relatively brief interval when the piston is at a selected position and the bounce space pressure is to be equal to the working space pressure and for blocking the passageway when the piston is at the same position but said pressures are to be unequal.

4,583,365

RETICULATED ELECTROTHERMAL FLUID MOTOR

Frank T. John, Williamsville, N.Y., assignor to Georgina C. Hirtle, Springville, Calif., a part interest

Continuation-in-part of Ser. No. 69,249, Aug. 23, 1979, Pat. No. 4,419,650. This application Dec. 6, 1983, Ser. No. 558,503
Int. Cl.[4] F03C 5/00
U.S. Cl. 60—531 22 Claims



1. An electrothermal motor comprising:

an enclosure with external heat exchanger,

heating elements of microscopic size, interconnected and structurally self-supporting, which are electrically conductive and resistive, providing a heating surface distributed throughout said enclosure,

a fluid in said enclosure and located in the void space between said heating elements,

an electrical control current in a controlling circuit, connected to said heating elements, which cause by electrical heating effect the generation of a thermally induced expansion, pressure, and the energy to produce flow in said fluid,

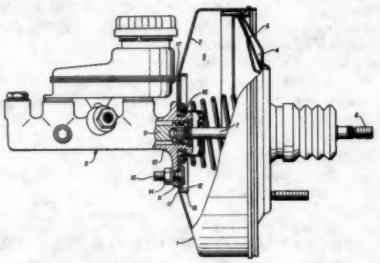
an exit port coupling said fluid and its mechanical energy to an external load.

4,583,366

VACUUM BRAKE BOOSTER

Kaoru Tsubouchi, Toyota, and Michiharu Nishii, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 29, 1982, Ser. No. 428,411
Claims priority, application Japan, Oct. 9, 1981, 56-149516[U]
Int. Cl.[4] B60T 13/00
U.S. Cl. 60—547.1 4 Claims



1. A vacuum booster for a vehicle having a master cylinder, comprising

a body having a bent portion;

a reinforcing member spaced from and welded to said body and including a bent flange member extending therefrom and a connection portion interconnecting said reinforcing member and said bent flange member; and

means for installing said master cylinder onto said body as reinforced by said reinforcing member such that a load transmitted from said master cylinder is in turn transmitted to a body of said vehicle via said reinforcing member wherein;

said bent portion is located at an axial end wall of said body and is in engagement with said master cylinder and which further comprises a circular flat surface portion located at an inner radial portion thereof and a substantially conically shaped portion located at an outer radial portion thereof;

said master cylinder is fixed to an exterior portion of said circular flat surface portion by said means for installing said master cylinder onto said body;

said connecting portion contacts said conically shaped portion of said bent portion;

said reinforcing member is engaged with an interior portion of said circular flat surface portion;

said bent flange member is formed on an outer peripheral portion of said reinforcing member and extends in an axial direction from said reinforcing member away from said end wall of said body; and

a center of radius of said bent portion is located radially within a center of bending radius of said flange member and an outer diameter of said reinforcing member is greater than that of said bent portion.

4,583,367

EXHAUST GAS TURBOCHARGER

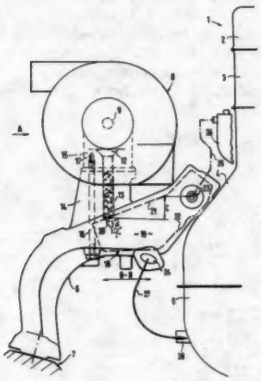
Jürgen Kapfer, Renningen; Hans Körkemeier, Weissach, and Klaus Gröger, Hemmingen, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Weissach, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 670,937

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341119

Int. Cl.[4] F02B *37/00*

U.S. Cl. 60—605 12 Claims



1. An exhaust gas turbo charger for an internal-combustion engine of a motor vehicle, said engine being mounted at at least one bracket disposed at an elastic supporting element, wherein said bracket is used for holding of said exhaust gas turbo charger and includes therewith a device for the defoaming and degasification of lubricating oil medium leaving said exhaust gas turbo charger.

4,583,368

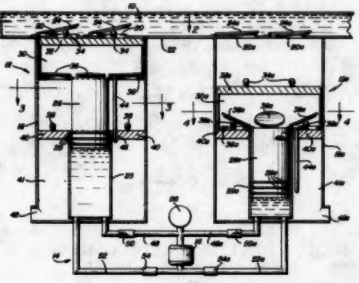
WATER-POWERED HYDRAULIC MOTOR

Victor L. Neuenschwander, Box 1098, Bloomfield, N. Mex. 87413

Filed Jul. 24, 1985, Ser. No. 758,396

Int. Cl.[4] F03G *3/00*

U.S. Cl. 60—639 9 Claims



1. A hydraulic power system for operating a rotary hydraulic motor or like driven member comprising a pair of hydraulic piston/cylinder assemblies each disposed in vertical disposition below a water reservoir, the respective cylinder heads being interconnected by hydraulic delivery and supply conduits in a closed circuit including the driven member, for operation of the driven member by forward and reverse flow of liquid through the circuit effected by repetitive flow cycles each comprising sequential filling of one cylinder with liquid from the circuit and raising of its piston accompanied by lowering of the other piston and emptying of its cylinder into the circuit followed by emptying of the one cylinder and filling of the other, the respective pistons each having an upper end formed as a water tank for filling from said reservoir when the piston is in an uppermost position through first valve means connected between the reservoir and the tank, and for emptying to a discharge means when the piston is in a lowermost position through second valve means connected between the water tank and the discharge means, the filling and emptying of the respective water tanks providing motive power for raising and lowering the pistons as aforesaid to produce the flow cycles.

4,583,369

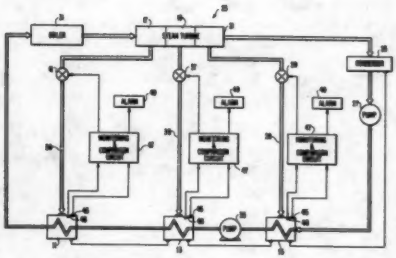
SYSTEM FOR DETECTING TUBING RUPTURE IN FEEDWATER HEATERS OF STEAM POWER PLANT

Mark A. Shapiro, Southfield, Mich., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed May 9, 1985, Ser. No. 732,297

Int. Cl.[4] F01K *19/00*

U.S. Cl. 60—657 9 Claims



1. In a steam power plant comprising a steam turbine, means to supply steam to said turbine including at least one feedwater heater comprising an outer shell and tubing to carry feedwater through said outer shell, means to introduce extraction steam from said turbine into said outer shell to heat the feedwater in said tubing, the improvement comprising means to detect a predetermined combination of a plurality of different parameter changes that occur when feedwater leaks from said tubing into the steam space within said outer shell and to generate when said combination of plurality of parameter changes occur a signal indicating that feedwater is leaking from said tubing into said steam space.

4,583,370

HEAT EXCHANGER AND SYSTEMS AND METHODS FOR USING THE SAME

Gad Assaf, Rehovot, Israel, assignor to Geophysical Engineering Company, Seattle, Wash.

Filed Dec. 6, 1983, Ser. No. 558,436

Int. Cl.[4] F01K *11/02, 27/00*; F03G *7/02*

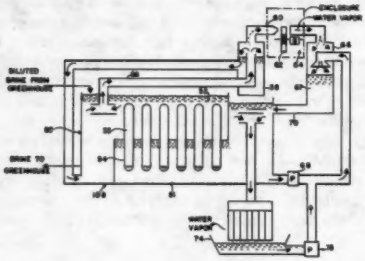
U.S. Cl. 60—688 10 Claims

1. A system for generating electricity comprising:

(a) a heat exchanger that includes (1) a housing containing upper and lower layers of water, the upper layer being less dense than the lower layer; (2) stratification means for preventing mixing of the two layers; and (3) heat transfer means for enhancing transfer of heat between the layers;

(b) a flash evaporator for flashing water from the upper layer into steam;

(c) a turbogenerator responsive to steam produced by the flash evaporator for producing power; and



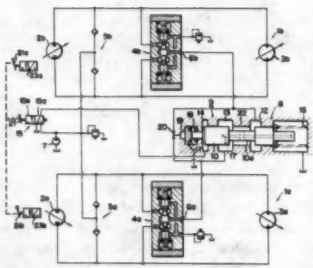
(d) a direct contact steam-brine condenser for condensing steam exhausted from the turbogenerator on brine from the lower layer within the condenser.

4,583,371

HYDROSTATIC DRIVE ARRANGEMENT

Kenzo Hoashi, Yokohama; Koichi Morita, and Kazuo Matsuda, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 440,496, Nov. 10, 1982, abandoned. This application Mar. 18, 1985, Ser. No. 713,096
Int. Cl.[4] F15B *11/22*
U.S. Cl. 60—426 **5 Claims**



1. A hydrostatic drive arrangement for a vehicle, comprising:

a pair of variable speed hydrostatic transmissions each having a hydraulic pump, a hydraulic motor and a closed loop hydraulic circuit interconnecting said pump and said motor for communicating fluid therebetween;

synchronizing valve means interconnected between said hydraulic circuits of said transmissions normally permitting interflow of fluid through first passage means between said hydraulic circuits for synchronizing the output speeds of said transmissions when the fluid pressure in said hydraulic circuits is below a predetermined value, said synchronizing valve means being responsive to fluid pressures in said hydraulic circuits to restrict interflow therebetween through restricted second passage means when the fluid pressure in one of said hydraulic circuits exceeds said predetermined value;

a hydraulic charge pump connected with said closed loop hydraulic circuits for replenishing fluid lost from said hydraulic circuits; and

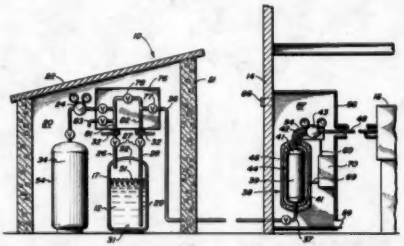
selector valve means disposed between said hydraulic charge pump and said synchronizing valve means for selectively communicating said synchronizing valve means normally blocking communication between said synchronizing valve means and said hydraulic charge pump and establishing communication between said synchronizing valve means and the drain thereby permitting interflow of fluid between said hydraulic circuits, and means responsive to a steering operation of the vehicle to establish communication between said synchronizing valve means and said hydraulic charge pump thereby blocking interflow of fluid between said hydraulic circuits.

4,583,372

METHODS OF AND APPARATUS FOR STORING AND DELIVERING A FLUID

James J. Egan, Allentown; Jeffrey T. Koze, Whitehall, and Henry Y. Kumagai, Allentown, all of Pa., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jan. 30, 1985, Ser. No. 696,279
Int. Cl.[4] F17C *7/02*
U.S. Cl. 62—53 **18 Claims**



1. A method of storing and delivering a fluid, comprising:

storing the fluid in its liquid state in a pressure vessel located at a site remote from a processing facility;

delivering the fluid in its liquid state under a first predetermined pressure to an evaporator vessel located at the processing facility;

maintaining the evaporator vessel substantially at a first predetermined temperature above an ambient temperature range, such that the fluid at such first predetermined temperature and first predetermined pressure is substantially always in a gaseous state, thereby evaporating the fluid entering the evaporator vessel and maintaining in the evaporator vessel a supply of the fluid in its gaseous state at such first predetermined pressure;

drawing fluid from the supply of fluid in the evaporator vessel for use within the processing facility;

reducing the pressure of such drawn off fluid to a second predetermined pressure of such magnitude at which the fluid retains its gaseous state at a temperature in a range expected to be maintained within the processing facility; and

delivering the fluid at substantially such second predetermined pressure to a usage destination within the processing facility.

4,583,373

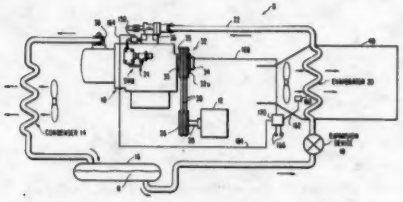
CONSTANT EVAPORATOR PRESSURE SLIDE VALVE MODULATOR FOR SCREW COMPRESSOR REFRIGERATION SYSTEM

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 580,047, Feb. 14, 1984, Pat. No. 4,495,778. This application Sep. 27, 1984, Ser. No. 654,911
Int. Cl.[4] F25B *41/00*
U.S. Cl. 62—196.3 **9 Claims**

1. In a closed loop refrigeration system for conditioning a space, said system comprising a positive displacement com-

pressor, a condenser, and an evaporator, conduit means carrying a condensible refrigerant working fluid and connecting said compressor, condenser and evaporator in closed loop series and including expansion means upstream of said evaporator, said compressor including a shiftable slide valve for movement between a first position to effect full unloading of the compressor and a second position to effect full loading of the compressor, and vice versa, a fluid motor for shifting said slide valve between said first and second positions, said fluid motor comprising a movable member operatively coupled to said slide valve, means defining with said movable member a first sealed chamber remote from said slide valve and a second sealed chamber proximate to said slide valve on respective sides of said movable member, means for subjecting said sec-



ond chamber to compressor discharge pressure; the improvement comprising:

restricted passage means connecting said first chamber to said second chamber such that said first chamber tends to be at discharge pressure with zero pressure differential across said movable member,

means normally venting said first chamber to compressor suction pressure, thereby overriding said restricted passage means, and

means for selectively activating the venting of said first chamber to compressor suction pressure in response to fall of suction pressure below a predetermined value, thereby preventing a serious reduction in evaporator temperature caused by either a reduction in load on the evaporator, an increase in speed of the compressor or both.

4,583,374

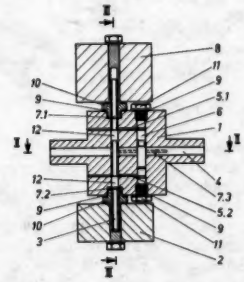
TEMPERATURE AND LIQUID LEVEL CONTROL SYSTEM FOR FLUID CYCLES

Friedhelm Franz; Walter Nestler; Eberhard Wobst, all of Dresden; Christian Kluge, Freital; Egon Preussker, and Günther Ulbrich, both of Dresden, all of German Democratic Rep., assignors to VEB Kombinat Luft-und Kältetechnik, Dresden, German Democratic Rep.

Filed Oct. 21, 1983, Ser. No. 544,381

Int. Cl.[4] F25B *41/00*

U.S. Cl. 62—210 **31 Claims**



8. An apparatus for the control of temperatures, temperature differences or, respectively, liquid levels in refrigeration cycles comprising

a controller forming a plural position correcting variable depending on the deviation from the set point;

devices with temperature dependent electrical properties providing sensors connected to the controller;

a reference point source for providing an adjustable reference point to the controller; and

low wear two position valves having a high frequency of switching actuation, providing final control members and connected to the controller and each two position valve including

a valve body;

a first magnet disposed below the valve body;

a second magnet disposed above the valve body;

a liquid channel running through the valve body;

a control bore disposed in the valve body and communicating with the liquid channel;

a control piston guided in the vertical control bore;

a working bore disposed in the valve body and communicating with the liquid channel;

a working piston having a throttling position and disposed in the working bore;

a first control channel disposed above the liquid channel connecting the control bore to the working bore;

a second control channel connecting the control bore to the working bore;

a first bushing extending the control bore into the second magnet;

a second bushing extending the control bore into the first magnet;

a connection channel joining the output side of the liquid channel;

a first intermediate channel connecting the upper part of the control bore to the connection channel;

a second intermediate channel connecting the lower part of the control bore to the connection channel.

4,583,375

COOLING APPARATUS

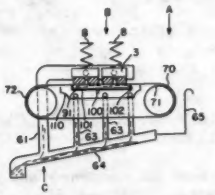
Yoshio Sasaki, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1985, Ser. No. 703,494

Claims priority, application Japan, Feb. 23, 1984, 59-34549; Feb. 23, 1984, 59-34550; Feb. 23, 1984, 59-34551

Int. Cl.[4] F25C *5/14*

U.S. Cl. 62—341 **8 Claims**



1. A cooling apparatus for freezing food products, comprising:

a conveyor having at least one horizontal run upon which said food products may be conveyed;

cooling vessel means vertically movably mounted above said horizontal run;

means for moving said cooling vessel means downward into direct contact with said food products on said horizontal run; and

lower cooling means for cooling said horizontal run, said lower cooling means comprising:

(a) a shallow open topped container positioned immediately below said horizontal run, and

(b) means for delivering cooling fluid to the bottom of said container, whereby overflow cooling fluid from said container flows along a bottom surface of said horizontal run for cooling said horizontal run.

4,583,376

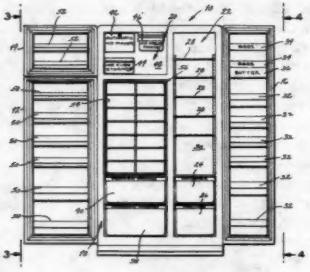
FREEZER/REFRIGERATOR AND REMOVABLE FOOD MODULE FOR USE THEREIN

Gloria C. Pritchard, 5909 Cates, Apt. 2E, St. Louis, Mo. 63112

Filed Apr. 5, 1985, Ser. No. 720,182

Int. Cl.[4] F25D *25/02*

U.S. Cl. 62—382 **8 Claims**



1. For use with a domestic refrigerator having a front door and providing at least one refrigerated module compartment accessible when the door is open, a removable and replaceable food module adapted for being received within the module compartment, the module comprising a plurality of tray compartments corresponding to each of a multiplicity of consecutive days in a period, the tray compartments being configured for holding multiple trays, each tray containing food items preselected for providing a complete meal, indicia for designating the days in the period corresponding to respective tray compartments, trays for such tray compartments, the trays being of nonmetallic material permitting heating of the food on the tray by microwave oven heating, each tray compartment being configured for holding at least one such tray having food for preparation on the day designated for such tray compartment, the module having a door for closing the module for sanitary enclosure of food-filled trays therein, first handle means at the front of the module for permitting withdrawal of the module from the module compartment, and second handle means atop the module for permitting lifting of the module for transportion of the module, whereby the module may be removed at the end of the period and replaced with a like module containing food for a subsequent period of days.

4,583,377

REFRIGERANT SUCTION ACCUMULATOR, ESPECIALLY FOR TRANSPORT REFRIGERATION UNIT

Herman H. Viegas, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed May 24, 1984, Ser. No. 613,831

Int. Cl.[4] F25B *43/00*

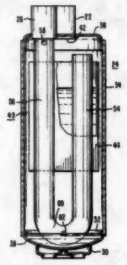
U.S. Cl. 62—503 **3 Claims**

1. A refrigerant suction accumulator comprising:

a casing having a top wall, and a bottom wall forming the bottom of a liquid sump;

a generally U-shaped tube for carrying refrigerant and oil from said casing to a refrigerant compressor, said tube having one leg having an inlet end disposed in the upper interior space of said casing and its other leg projecting in sealed relation out of said casing, the bight of said tube being disposed in said bottom sump portion of said casing and including a liquid return port therein;

partition means in said casing separating a part of the interior into an upwardly open refrigerant return and holding chamber having its bottom elevated relative to said sump, said return chamber having drip port means in its lower portion of a size to meter liquid from said return chamber to said sump at a rate to limit build up of liquid in said sump and to temporarily hold liquid in said chamber under conditions during which large quantities of liquid refrigerant are returned to said casing;



return tube means for returning refrigerant from a refrigerant evaporator to said casing and having an outlet end in the upper portion of said casing and directed to discharge refrigerant into the space defined by said return and holding chamber, said outlet end further being disposed relative to said inlet end of said one leg of said U-shaped tube to substantially minimize direct return of liquid to said inlet end; and

heat exchanger means associated with at least said bottom sump to vaporize liquid refrigerant therein.

4,583,378

REFRIGERATOR

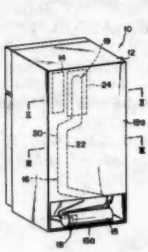
Noriaki Sakamoto, and Shinji Hirai, both of Oosaka, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 6, 1985, Ser. No. 708,942

Claims priority, application Japan, Mar. 14, 1984, 59-36235[U]

Int. Cl.[4] F25B *31/00*

U.S. Cl. 62—505 **5 Claims**



1. A refrigerator comprising:

a main body;

a compressor arranged within the main body;

a section to-be-heated arranged above the compressor;

a thermosiphon including:

(a) an operating fluid, and

(b) closed-loop pipe means, for holding said fluid and for conveying the heat generated by the compressor to the secion to-be-heated by circulating the operating fluid using the heat from the compressor, said closed loop pipe means including: (1) a heat receiving portion located in the vicinity of the compressor to maximize absorption of

heat generated by the compressor, (2) an upper portion located in the vicinity of the section to-be-heated, (3) an advancing portion extending from the heat receiving portion to the upper portion, and (4) a returning portion extending from the upper portion to the heat receiving portion; and

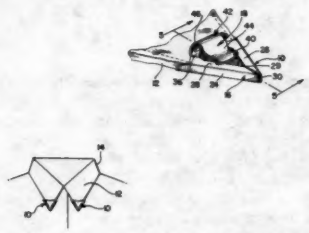
heat radiating means coupled to a portion of only the upper portion and the returning portion of the thermosiphon thus forming a heat radiating portion, said heat radiating portion having a heat radiation efficiency higher than that of the advancing portion, thereby maximizing the temperature differential between said advancing portion and said heat radiating portion.

4,583,379

COLLAR TIP CONSTRUCTION

Italo Rotondo, 59 Smart St., Providence, R.I. 02904, and Warren Dontigney, North Scituate, R.I., assignors to Italo Rotondo

Filed Oct. 15, 1984, Ser. No. 661,241
Int. Cl.[4] A44C *25/00*
U.S. Cl. 63—2 **1 Claim**



1. A collar tip construction comprising:

a. a tip element comprising a front wall defined by a pair of angularly disposed side edges which meet at an apex and an upper edge which extends between said side edges at the ends thereof opposite said apex, a pair of side walls which extend rearwardly from said side edges, a pair of rear wall portions which extend inwardly from said side walls, a pair of mounting elements which extend from said rear wall portions, and a pair of gripping elements each having a plurality of gripping teeth integrally formed with and extending rearwardly from said upper edge, said teeth terminating in blunt edges; and

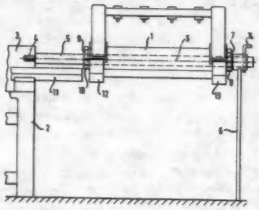
b. a clamp element pivotally mounted in said mounting elements so that it is pivotable about an exis which extends therebetween, said clamp element comprising an arcuate clamping portion and a handle portion which is disposed on the opposite side of said axis from said clamping portion, said clamp element being constructed and mounted so that it is pivotable along a path about which said gripping elements are located between a position wherein said handle portion extends generally rearwardly from said tip element and said clamping portion is spaced from said front wall by an amount sufficient to slidably receive the terminal portion of a lapel therebetween, and a second position wherein said clamping portion is closely spaced from said front wall adjacent said upper edge so that when a collar lapel is received in said collar tip, said lapel is adapted to be compressed between said clamping portion and said gripping elements.

4,583,380

CARRIAGE REMOVAL AND SUPPORTING DEVICE FOR FLAT KNITTING MACHINES

Reinhold Schimko, Aalen-Wasseralfingen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 14, 1985, Ser. No. 765,484
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1984, 3429931
Int. Cl.[4] D04B *7/04*
U.S. Cl. 66—64 **8 Claims**



1. An apparatus for removing the carriage from the frame of a flat knitting machine and holding it in any desired pivoted position comprising,

(a) a bearing member on at least one end of the frame in the region of the longitudinal axis through the centre of gravity of the cross-section of the carriage,

(b) a support tube attachable at one end to the bearing member so that it runs approximately along the longitudinal axis through the centre of gravity of the cross-section of the carriage,

(c) a supporting frame at the other end of the support tube, and

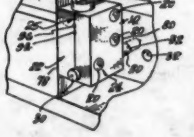
(d) supporting and clamping means slidingly engaging the support tube and securable to both ends of the carriage.

4,583,381

ROTARY DOOR AND WINDOW LOCK

C. Norman Sjogren, San Gabriel, Calif., assignor to Belwith International, Ltd., City of Industry, Calif.

Filed Jan. 9, 1984, Ser. No. 568,723
Int. Cl.[4] E05B *65/08*
U.S. Cl. 70—95 **6 Claims**



1. A right-angle door lock comprising:

a body case;

a generally cylindrical barrel lock housing contained within said case and including a barrel key operated lock and a locking cam lug;

means for mounting said barrel lock housing in said case so as to be reciprocally slidable within said case along a first axis;

an extension arm on the barrel lock housing, said arm being laterally offset from the longitudinal axis of said housing;

an elongated lateral aperture formed in said arm;

a bolt mounted in said case so as to be reciprocally slidable therein along a second axis normal to the first axis, said barrel lock housing and bolt being mounted in said case so that said first and second axes are intersecting and coplanar;

circular rack means formed on said bolt so as to be disposed within the case;

a rotatable disk mounted in said case and having an arcuate toothed portion in the plane of said axes so as to engage the rack means;

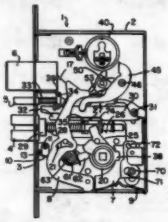
a crank pin extending outwardly from the disk normal thereto, so as to be offset approximately ninety degrees from said arcuate toothed portion and be disposed within an elongated recess in the arm, whereby linear movement of the barrel lock housing into the case causes the arm to move the crank pin to rotate the disk to cause the arcuate toothed portion to rotate in a preselected direction, thereby moving the bolt in a first direction which is normal to the direction of the housing movement, and movement of the barrel lock housing out of the case causes the crank pin to rotate the disk in a direction opposite the preselected direction, thereby moving the bolt in a second direction which is opposite to the first direction.

4,583,382

REVERSIBLE LATCH ASSEMBLY WITH INTEGRATED FUNCTION

Scott A. Hull, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Dec. 21, 1983, Ser. No. 564,037
Int. Cl.[4] E05B *59/00*
U.S. Cl. 70—107 **16 Claims**



1. A door lock comprising:

a generally rectangular case having a front plate for confronting a door frame and having at least an inside side and outside side for enclosing the lock works;

a latch bolt disposed in said case a portion of which is selectively extensible from said front plate of said case for securing relative movement between said door and said door frame;

a dead bolt disposed in said case, a portion of which is selectively extensible from said front plate of said case for further securing relative movement between said door and said door frame;

a first lockable handle means for selectively retracting said latch bolt disposed on the outside of the side of said case;

a second handle means disposed on the inside of said case for simultaneously retracting said latch bolt and said dead bolt;

a first lock means within said case for securing at least one of said first and second handle means against operation;

a second lock means operable from the said inside of said door for selectively releasing said first lock means and retracting said dead bolt in a first position, deploying said first lock means in a second position and deploying said first lock and extending said dead bolt in a third position;

a third key operated lock means operable from the outside side of said door for selectively retracting said latch bolt and said dead bolt;

means for preventing operating of said third lock means when said dead bolt is extended; and

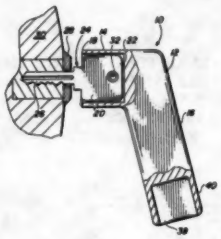
an inner and an outer retractor hub means which are axially aligned and mounted for independent rotation within said case, said inner retractor hub means being located adjacent to said inner side of said case and operated by said second handle means, said outer retractor hub means, being located adjacent to said outside side of said case and operated by said first lockable handle means.

4,583,383

KEY-TURNING DEVICE

Joseph Bosco, and Deborah Bosco, both of 850 Country Club Dr., Burbank, Calif. 91501

Filed Jan. 28, 1985, Ser. No. 695,199
Int. Cl.[4] E05B *19/04*
U.S. Cl. 70—408 **9 Claims**



1. An improved nail-protecting key turning device, said device comprising, in combination:

(a) an elongated body having a key-receiving recess at one end thereof, with two arms of unequal length, the longer arm diverging from said shorter arm at an obtuse angle and bearing said key-receiving end, whereby a key protruding from said key-receiving end can easily be turned in a lock by rotating said longer arm without danger of striking fingernails against the lock during said key turning; and,

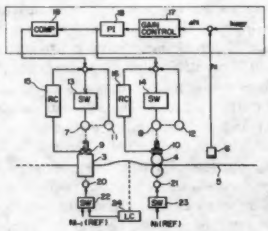
(b) means for connecting said body to a key chain.

4,583,384

CONTROL DEVICE FOR CONTINUOUS ROLLING MACHINE

Shuhei Niino; Koichi Ishimura; Ken Okamoto, and Koichi Ohba, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 428,497
Claims priority, application Japan, Sep. 30, 1981, 56-157209; Sep. 30, 1981, 56-157210
Int. Cl.[4] B21B *37/02*
U.S. Cl. 72—8 **5 Claims**



1. In a continuous rolling machine of the type wherein a

rolling material is passed through a plurality of mill stands, each of said mill stands having a rolling position and an exit, a control device comprising: first rolling position control means controlling the rolling position of a first of said plurality of mill stands in accordance with a first rolling position control signal;

second rolling position control means controlling the rolling position of a second of said plurality of mill stands in accordance with a second rolling position control signal;

first detection means detecting a first dimension of said rolling material at the exit of one of said first and second mill stands and generating a first detection signal;

control signal means generating both of said first and second rolling position control signals in accordance with said first detection signal;

wherein the rolling position of the other of said first and second mill stands is variable in a direction corresponding to a second dimension substantially perpendicular to said first dimension; and

wherein said control signal means further comprises first means comparing said first detection signal to a first reference signal to obtain a first difference signal;

second means responsive to said first difference signal and generating said first rolling position control signal in accordance with a coefficient (Kh) of the change in the rolling position of said one mill stand with respect to a change in said first dimension of said rolling material; and

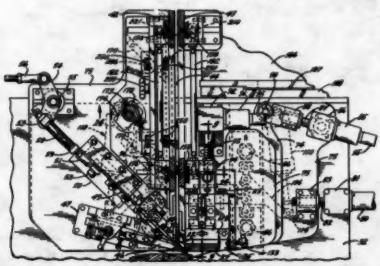
compensation means generating a compensation signal correcting said first rolling position control signal in accordance with a coefficient (Kbi) of the change in the rolling position of said one mill stand with respect to a change in said second dimension of said rolling material and also in accordance with a coefficient (Kbi−1) of the change in the rolling position of said other mill stand with respect to a change in said second dimension of said rolling material.

4,583,385

FLAT DIE THREAD ROLLER

Warren M. Jackson, Rockford, Ill., assignor to Warren M. Jackson, Inc., Rockford, Ill.

Filed Nov. 14, 1983, Ser. No. 551,476
Int. Cl.[4] B21H *3/06*
U.S. Cl. 72—90 **4 Claims**



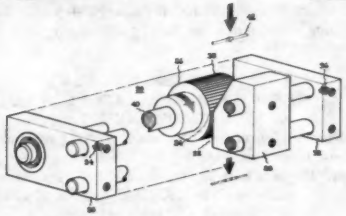
1. A flat die thread rolling machine comprising a base, stationary and movable dies on said base and having opposed faces with thread forming elements extending therealong, means for reciprocating said movable die back and forth relative to said stationary die between first and second positions and along a preselected path extending in the same general direction as said thread forming elements, mechanism for feeding a fastener blank between said dies each time said movable die is in said first position, a first member supported for selective adjustment relative to said base and carrying said stationary die, a second member carrying said first member and supported for selective adjustment relative to said base along a different path than said first member, said first member and said stationary die being movable with but also being adjustable relative to said second member, a third member carrying said second member and supported for selective adjustment relative to said base along a different path than said first and second members, said first and second members and said stationary die being movable with but also being adjustable relative to said third member, said second and third members being sandwiched between said base and said first member, means for selectively adjusting said first member to different positions relative to said second member and said base, for selectively adjusting said second member to different positions relative to said third member and said base and for selectively adjusting said third member to different positions relative to said base, locking means adapted to be switched between a clamped condition for clamping said members tightly against movement relative to said base and a released condition unclamping said members for adjustment relative to said base by said adjusting means, and a reversible power-operated actuator connected to said locking means and selectively operable to switch said locking means between said clamped and released conditions, said locking means acting independently of said adjusting means and being switchable by said power-operated actuator between said clamped and released conditions without changing the adjusted position of said members on said base, said locking means comprising a plurality of rods each extending slidably through said base and said second and third members and each anchored to said first member, said actuator comprising force-applying wedge means operable to exert force on said rods in one longitudinal direction to clamp all of said members against movement relative to said base and operable to release the force on said rods to unclamp all of said members from said base.

4,583,386

METHOD TO REDUCE WELD FLASH

Emmett P. Ham, Goldsboro, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,544
Int. Cl.[4] B21D *3/02, 1/06*
U.S. Cl. 72—92 **9 Claims**



1. A method to reduce the size of weld flash located at the junction of two workpieces each having a cylindrical contour and which have been butt-welded together while not otherwise changing the physical dimensions of said workpieces comprising:

(a) positively feeding the butt-welded workpieces downwardly by roller means including at least one horizontally disposed roller member oriented to rotate in a clockwise direction while said butt-welded workpieces are aligned transverse to the rotational direction through a horizontal exit slot opening smaller in width than the original diameter of the weldflash, said horizontal exit slot opening being defined by an open space between the rotating surface of said roller member and an opposing surface having the same alignment as said rotating surface, and with said exit slot opening being located below a larger size entrance opening formed between said roller member and said opposing surface, said slot opening further continuously diminishing in width between said entrance opening and said exit opening,

(b) rotating said roller member about its axis,

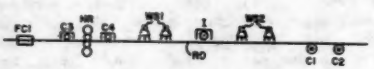
(c) imparting rotation to said butt-welded workpiece by said roller member during passage downwardly through said slot opening
(d) allowing the width of said slot opening to be varied with spring means as the butt-welded workpieces are being fed downwardly therethrough,
(e) exerting sufficient mechanical force with the sides of said slot opening to reduce the diameter of the weldflash only by compaction, and
(f) discharging the workpieces from the exit opening.

4,583,387

APPARATUS FOR THERMOMECHANICALLY ROLLING HOT STRIP PRODUCT TO A CONTROLLED MICROSTRUCTURE

John E. Thomas, Pittsburgh; Ronald D. Gretz, Tarentum, and George W. Tippins, Pittsburgh, all of Pa., assignors to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 397,789, Jul. 13, 1982, Pat. No. 4,505,141. This application Oct. 12, 1984, Ser. No. 660,091
Int. Cl.[4] B21B *45/02, 9/00*
U.S. Cl. 72—201 **2 Claims**



1. In a hot rolling steel processing line including a hot reversing mill having coilers on either side thereof and a runout table having cooling means downstream of said mill and said coilers, the improvement comprising an in-line heat treatment furnace positioned downstream of the hot reversing mill and intermediate the cooling means to define first cooling means upstream of said heat treating furnace and second cooling means downstream of said heat treating furnace, said furnace including means for receiving and coiling slabs reduced to a coilable thickness and heat treating to achieve a controlled microstructure to impart preselected metallurgical properties prior to decoiling and cooling for further processing.

4,583,388

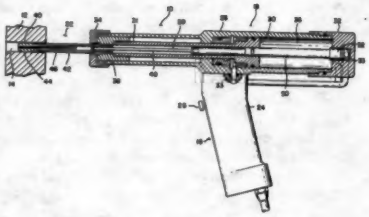
METHOD AND APPARATUS FOR HOLE COLDWORKING

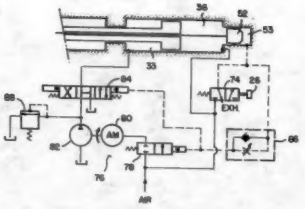
Franciscus Hogenbout, Redmond, Wash., assignor to West Coast Industries, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 537,505, Sep. 30, 1983. This application Nov. 23, 1984, Ser. No. 674,525
Int. Cl.[4] B21D *41/02*
U.S. Cl. 72—393 **5 Claims**

1. Apparatus for coldworking holes in an associated workpiece comprising:

a. a mandrel having an axially directed slot and at least three radially directed slots therein defining at least three segments of the mandrel to permit contraction of the outer diameter of the mandrel, thereby facilitating insertion of the mandrel in a hole to be coldworked;
b. a pilot disposed within the axially directed slot of said mandrel;
c. housing means for housing a portion of said mandrel containing said pilot;
d. a first piston disposed within said housing means and connected to said pilot, said housing having a cavity for receiving said first piston when the apparatus is at rest;
e. a source of air pressure located outside of said housing means and communicating with the end of said first piston closer to said mandrel causing said first piston to remain in said cavity when the apparatus is at rest, said source of air pressure connected with the end of said first piston farther away from said mandrel;
f. a first valve located between said source of air pressure and the end of said first piston farther away from said mandrel, the opening of said first valve initiating movement of said first piston within said housing means;
g. a second piston disposed in said housing means and connected to said mandrel, the end of said second piston farther away from the workpiece during operation communicating with said source of air pressure;
h. hydraulic fluid disposed in said housing means communicating with the end of said second piston closer to the workpiece during operation of the apparatus;
i. a hydraulic pump located outside said housing means for pressurizing said hydraulic fluid, said hydraulic pump connected to and activated by said source of air pressure;
j. a second valve located between said hydraulic pump and said second piston, said second valve connected to said source of air pressure and allowing passage of said hydraulic fluid therethrough when open;
k. a third valve located between said source of air pressure and said hydraulic pump, said third valve initiating said hydraulic pump when open;





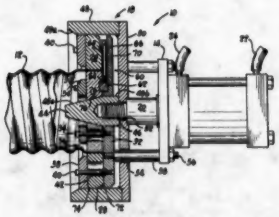
l. a fourth valve connected to said air pressure source and said second and third valves; and activation means for opening said fourth valve causing opening of said second and third valves only after said first piston has moved within said housing means and fully engaged said pilot in the tip of said mandrel;
m. trigger means located on said housing means, said trigger means when depressed activating the opening of said first valve thereby causing said first piston to move within said housing means and engage the end of said pilot in the tip of said mandrel, said trigger means when depressed activating the opening of said second valve, said third valve, and said fourth valve causing said second piston to move after said first piston has fully engaged said pilot within said mandrel and thereby pull said mandrel containing said pilot through the hole to be coldworked, said trigger means when released activating the closing of said first, second, third and fourth valves.

4,583,389

METHOD FOR REMOVING CERTAIN OF THE CORRUGATIONS IN A HELICALLY CORRUGATED PIPE

Albert M. Thomas, North Canton, Ohio, assignor to LTV Steel, Cleveland, Ohio

Division of Ser. No. 937,429, Aug. 28, 1978, abandoned. This application May 9, 1980, Ser. No. 148,133
Int. Cl.⁴ B21D *41/04, 41/02*
U.S. Cl. 72—402 **11 Claims**



1. A method for re-forming an end portion of a pipe having helical corrugations, comprising:

(a) placing the end portion between inner and outer annular dies each having a plurality of segments;

(b) moving opposed die segments radially toward each other to apply a force to the pipe to squeeze the pipe between the opposed die segments including moving the inner die segments radially to a rest position before the outer die segments have completed their radially inward movement; and

(c) the rest position of the inner die segments being such that the resultant inner diameter of the re-formed end portion is no greater than the diameter of an imaginary surface of revolution defined by the innermost surface of the pipe;

(d) whereby the force application removes the helical corrugations of the end portion of the pipe.

4,583,390

APPARATUS FOR SQUEEZING OFF AND REROUNDING PIPE

Robert N. Behrens, 4802 W. Laurel La., Glendale, Ariz. 85304

Filed Mar. 18, 1985, Ser. No. 713,414
Int. Cl.⁴ B21D *37/10*
U.S. Cl. 72—416 **14 Claims**

1. Apparatus for squeezing off and for rerounding pipe, comprising, in combination:

fixed frame means;

first pin means removably secured to the fixed frame means;

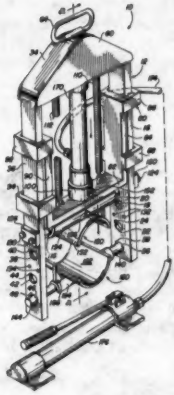
movable frame means disposed on the fixed frame means and movable relative thereto;

second pin means secured to the movable frame means;

first rerounding means disposed on the first pin means;

second rerounding means disposed on the second pin means; and

means for moving the movable frame means relative to the fixed frame means for first squeezing off a pipe between the first pin means and the second pin means and then for rerounding the squeezed off pipe between the first and second



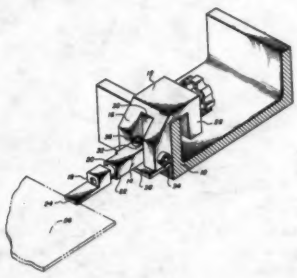
rerounding means when the first and second rerounding means are disposed on the first and second pin means.

4,583,391

ADJUSTABLE GAGE STOP

David H. Stafford, Andover, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.

Filed Sep. 20, 1984, Ser. No. 652,801
Int. Cl.⁴ B21D *11/22*
U.S. Cl. 72—461 **10 Claims**



1. An adjustable gage stop, comprising:

a mount having a forward end and rearward end, the rearward end being adjustably attachable to a support member;

a finger support having a forward end, a rearward end, and a longitudinal axis therebetween, the rearward end being pivotally attached to the forward end of said mount and pivotable about a horizontal pivot axis orthogonal to the longitudinal axis, the forward end having a longitudinal cavity and means for retaining a gage finger in said selected rotational positions with respect to the longitudinal axis,

a gage finger having a forward end and a rearward end, the rearward end having a portion mateable with the cavity in the forward end of the finger support, and having means cooperative with the retaining means of the finger support for maintaining the finger in said selected rotational positions, the forward end having a gage face;

adjustable connecting means, cooperative with said finger

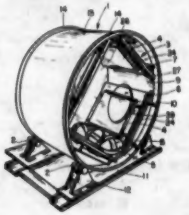
support and said gage finger, for connecting said finger support and said gage finger and adjusting the position of said gage finger relative to said finger support along its longitudinal axis, said adjustable connecting means including an adjustment control operative from the forward end of said gage finger for providing such longitudinal adjustment.

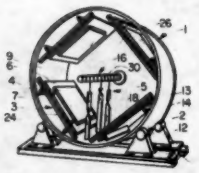
4,583,392

METHOD OF TESTING CONSTRUCTION UNITS WITHIN THE FURNITURE FIELD WITH ASSOCIATED ENVIRONMENTS IN THEIR NORMALLY USED ASSEMBLED STATE AND AN APPARATUS TO BE USED BY THE METHOD

Holger Holmgren, and Bo Wadling, both of Älmhult, Sweden, assignors to Inter-Ikea AG, Lucerne, Switzerland

Filed May 2, 1984, Ser. No. 606,242
Claims priority, application Denmark, May 10, 1983, 2074/83
Int. Cl.[4] G01N *3/56*
U.S. Cl. 73—7 16 Claims





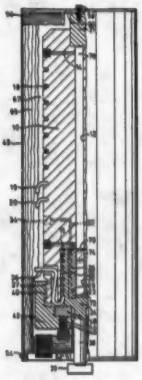
1. A method of reproducibly testing the resistance to wear and changes in appearance as well as the soil resistance of construction units within the furniture field with associated environments such as the domestic environment, offices, canteens, assembly halls, means of transport and the like in their normally used assembled state and in full size or optionally as scale models such as for an article of furniture with an outer coating of textile and with one or more underlying layers over a frame, said method comprising positioning a construction unit (4) or parts thereof in its full construction on an inner peripheral surface (9) of a rotatable, optionally reversible, large drum (1), adjustably securing said construction unit or parts thereof radially to position same a predetermined distance from the axis of symmetry of the drum, and subsequently subjecting said unit or parts thereof to the stress of stress members (5) located within the drum and activated by the rotation of the drum in such a manner that they slide on, abut, and/or are dragged acrosss the construction unit or parts thereof (4), whereby the number of stresses or rotations of the drum necessary for producing a predetermined change in appearance of the construction unit or parts thereof by given test conditions are registered.

4,583,393

ULTRASONIC DENSITY METER WITH DAMPING

Edmund G. F. Sweet, Burlington, Canada, assignor to Ontario Research Foundation, Mississauga, Canada

Filed Mar. 20, 1984, Ser. No. 591,110
Int. Cl.[4] G01N *9/00*
U.S. Cl. 73—32 A 17 Claims



1. A density meter comprising:
a main body,
a vertically elongated chamber in said main body adapted to contain a test fluid, the chamber having a bottom end and a top end,
a passageway in said main body connecting to the chamber adjacent the bottom end of the chamber, the passageway vertically spanning at least a bottom portion of the chamber and leading to the exterior of said main body,
the chamber containing in its lower end a liquid which is immiscible with and denser than said test fluid, the liquid also occupying at least part of said passageway,
access means communicating with the chamber at two longitudinally spaced apart locations therealong, whereby test fluid may be admitted to and evacuated from the chamber,
and measuring means for determining the location of the top surface of the liquid in the chamber, said measuring means including an ultrasonic device at the bottom of the chamber adapted to generate an ultrasound signal in the said liquid and to detect the return of the echo of said signal from the said top surface of the liquid in the chamber, the access means including an entry near the top of the chamber and an exit near the bottom of the chamber.

4,583,394

DEVICE AND METHOD FOR LEAK LOCATION

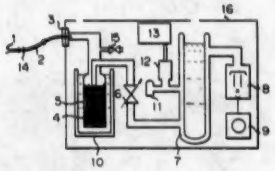
Yoshio Murakami, Mito; Kenjiroh Obara, Nakamachi; Tetsuya Abe, Tohkaimura; Yasuo Shimomura, Mito, and Takemasa Shibata, Tohkaimura, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Aug. 7, 1984, Ser. No. 638,421
Int. Cl.[4] G01M *3/22*
U.S. Cl. 73—40.7 20 Claims

1. A system for determining leaks through the walls of an enclosure which has been charged with a probe gas, comprising:
vacuum suction means for establishing a source of vacuum within said system;
means fluidically connected to said vacuum suction means for detecting the presence of said probe gas;
nozzle means open to the atmosphere for disposition outside of said enclosure walls so as to capture said probe gas

leaking out from said enclosure through leak locations within said enclosure walls;

porous adsorbent means fluidically connected to said gas detecting means for adsorbing substantially all gaseous products which have entered said nozzle means yet permitting said probe gas to pass through said porous adsorbent means to said gas detecting means; and



capillary tube means connected to said nozzle means and said porous adsorbent means for defining a high flow rate of said probe gas within said system whereby the sensitivity and leak detection efficiency of said system is able to be rendered high.

4,583,395

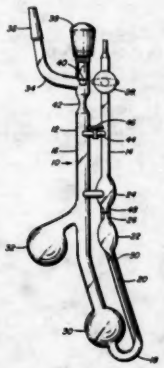
VISCOMETER

Ayilam V. Anantaraman, Nepean, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed May 24, 1985, Ser. No. 737,844

Int. Cl.[4] G01N *11/06*

U.S. Cl. 73—55 **5 Claims**



1. A viscometer comprising a substantially U-shaped tube having a bight and a first and second arms, a capillary in the first arm adjacent the bight, a stopper for each arm remote from the bight, a branch passage joining the first arm between the stopper and the capillary to the second arm between the stopper and the bight, a valve in the branch passage, a reservoir for liquid branched off the second arm between the stopper and the bight, and a collector in the second arm between the reservoir and the bight.

4,583,396

CONTAMINATION LEVEL INDICATOR

Trevor M. Hunt, Bristol, and Desmond E. Bowns, Bath, both of England, assignors to Ministry of Defence, London, England

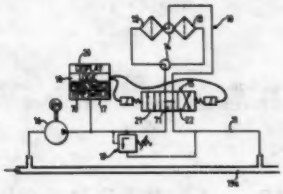
PCT No. PCT/GB83/00194, § 371 Date Apr. 11, 1984, § 102(e) Date Apr. 11, 1984, PCT Pub. No. WO84/00816, PCT Pub. Date Mar. 1, 1984

PCT Filed Aug. 4, 1983, Ser. No. 604,650

Claims priority, application United Kingdom, Aug. 13, 1982, 8223402

Int. Cl.[4] G01N *15/06*

U.S. Cl. 73—61 R **14 Claims**



1. An apparatus for providing a continuous indication of a level of contaminant in a fluid comprising:

a working fluid system;

a by-pass connected to said working fluid system;

flow rate control means in said by-pass whereby fluid flow through said by-pass can be controlled;

a pervious barrier in said by-pass, said barrier having pores of a known size therein;

a slide valve in said by-pass wherein fluid flow through said by-pass can be directed to one of a first or second sides of said barrier; and

a logic circuit responsive to pressure upstream of said barrier and to time whereby a rate of build-up of contaminant of particle size greater than said known size of said pores can be measured;

said logic circuit being operatively connected to said slide valve such that at a predetermined criterion said slide valve is actuated to redirect fluid flow to the other side of said barrier whereby contaminant is back flushed from said barrier whereafter another measurement is commenced,

said logic circuit being adapted to process said rate of build-up and to average said rate of build-up over a plurality of cycles to provide an indication of the level of contaminant in said fluid,

said logic circuit comprising means for compensating for variations in the viscosity of the fluid, the compensating means comprising means for obtaining, at different times, first and second values representative of a variable quantity, and means for deriving a ratio of said first and second values, the variable quantity being a function of the fluid flow rate through the barrier and the pressure drop across the barrier.

4,583,397

METHOD OF GEOPHYSICAL EXPLORATION IN A WELL BOREHOLE

Richard E. Parma, Houston, Tex., assignor to Amoco Corporation, Chicago, Ill.

Filed Jun. 6, 1985, Ser. No. 741,773

Int. Cl.[4] E21B *49/00*

U.S. Cl. 73—152 **16 Claims**

1. A method of geophysical exploration in a well borehole comprising the steps of:

(a) obtaining a first signal representative of formation lithology surrounding the well borehole at spaced intervals along a selected length of the well borehole;

(b) obtaining a second signal representative of formation bulk density surrounding the well borehole at spaced

intervals along the selected length of the well borehole; and

(c) plotting formation bulk density along the selected length of the well borehole as a function of formation lithology surrounding the well borehole.

4,583,398

APPARATUS FOR TESTING DATA CARRIERS

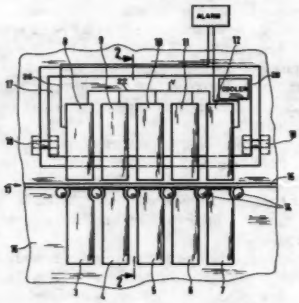
Wilhelm Mitzel, Neukeferloh, and Alexander Serester, Munich, both of Fed. Rep. of Germany, assignors to GAO Gesellschaft für Automation und Organisation mbH, Fed. Rep. of Germany

Filed Nov. 14, 1983, Ser. No. 551,474

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1982, 3242789

Int. Cl.[4] G01B *5/16*

U.S. Cl. 73—156 **12 Claims**



1. Apparatus for testing data carriers, such as banknotes, comprising:

means (**14**, **15**) for defining a transport path for the data carriers through said apparatus;

a base plate (**16**) arranged normal to said transport path for mounting a first plurality of sensors (**3–7**) closely adjacent one side of said transport path, said sensor sensing properties of the data carriers;

a mounting plate (**17**) for mounting a second plurality of sensors (**8–12**) for sensing properties of the data carriers, said mounting plate and second plurality of sensors forming an assemblage, said mounting plate having a first position in which said second plurality of sensors are arranged closely adjacent to the other side of said transport path and bear a predetermined positional relationship to said first plurality of sensors so that said first and second pluralities of sensors oppose each other and define a narrow gap through which the data carriers pass along said transport path, said mounting plate being movable to a second position in which said second plurality of sensors is removed from said first plurality to open said gap; and

means (**24**) engaging said mounting plate-second sensor plurality assemblage for reestablishing said predetermined positional relationship with said first plurality of sensors when said mounting plate returns to said first position from said second position.

4,583,399

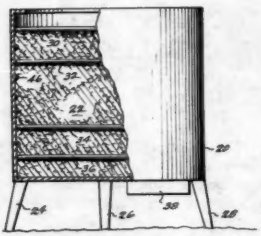
PRECIPITATION GAUGE

John E. Walsh, Box, Bradford, Vt. 05033, and James R. Longacre, 3621 Littledde Rd., Kensington, Md. 20795

Filed Mar. 15, 1985, Ser. No. 712,210

Int. Cl.[4] G01W *1/14*

U.S. Cl. 73—171 **11 Claims**



1. Apparatus for measuring the rate of precipitation comprising:

container means defining a container open at the top for receiving precipitation;

absorbent media within said container means for absorbing rainfall falling into said container and having a dielectric constant varying as a function of the volume of precipitation absorbed;

at least first and second conductive means extending in said media; and

circuit means connected to said first and second conductive means for applying an ac signal thereto to measure the impedance between said first and second conductive means and thereby the dielectric constant of such media and the volume of precipitation absorbed and

means for determining the rate of precipitation from said impedance.

4,583,400

FLOW METER

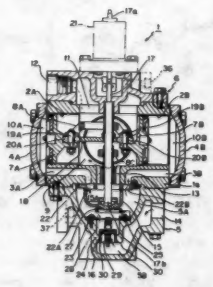
Shin-ichi Nojima, Tokyo, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Jul. 11, 1984, Ser. No. 629,592

Claims priority, application Japan, Jul. 11, 1983, 58-107284[U]

Int. Cl.[4] G01F *3/18*

U.S. Cl. 73—247 **2 Claims**



1. A flow meter comprising:

a housing formed by a main body and upper and lower caps;
an inlet port extending into one said cap and an outlet port extending from the other said cap;
at least two associated pistons mounted for reciprocation in respective cylinders defined in said main body;
metering chambers defined on first sides of respective said pistons;
passages formed in said housing for selectively connecting said metering chambers with said inlet and outlet ports;
a shaft mounted in said main body for rotation in response to reciprocation of said pistons;
a valve seat formed at a side of said main body adjacent said one cap;
a rotary valve cooperable with said valve seat and connected to said shaft for rotation therewith to connect one of said metering chambers through respective said passages with said inlet port and to connect the other said metering chamber through respective said passages with said outlet port;
a spring retainer mounted in said one cap;
first spring means acting between said spring retainer and said rotary valve for urging said rotary valve against said valve seat;
check valve means, provided in a passage in said one cap between said inlet port and said rotary valve, for permitting flow from said inlet port to said rotary valve and for preventing flow in the reverse direction;
second spring means acting between said spring retainer and said check valve means for urging said check valve means in a direction closing said passage in said one cap; and
said first and second spring means acting in opposite directions.

4,583,401

METHOD AND APPARATUS FOR MEASURING THE LEVEL OF LIQUIDS OR AGITATED CHARGES IN VESSELS

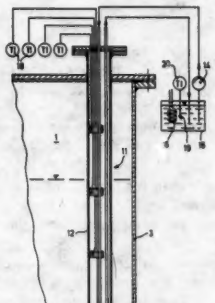
Heinz Schlindwein, Birkenheide, and Wolfgang Rühenbeck, Birkenau, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 22, 1983, Ser. No. 554,325

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244269

Int. Cl.⁴ G01F *23/22*

U.S. Cl. 73—295 **1 Claim**



1. Apparatus for measuring the level of a liquid or an agitated charge in a vessel, comprising a plurality of spaced elements arranged vertically in a probe tube immersed in the vessel each said element consisting of heat-conducting material, each element being located at a different level over the height of the probe tube at which the liquid or charge lever is to be monitored, and each element having two ends and being in thermal contact with the interior of the probe tube on one end and with a fluid conduit on the other end, each said element being equipped, at the said one end with a temperature sensor connected to a display, and said fluid conduit connected to a source of heat or cold fluid said source located exterior of said vessel and also being provided with a fluid temperature sensor and fluid temperature display.

4,583,402

FLUID-GAUGING SYSTEMS

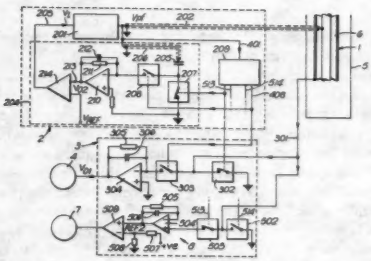
Ronald V. Myers, and Peter R. Thrift, both of Basingstoke, England, assignors to Smiths Industries Public Limited Company, London, England

Continuation-in-part of Ser. No. 294,950, Aug. 21, 1981, abandoned. This application Mar. 20, 1984, Ser. No. 591,366

Claims priority, application United Kingdom, Aug. 23, 1980, 8027500

Int. Cl.⁴ G08B *21/00*

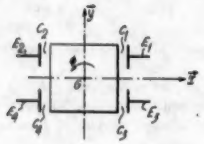
U.S. Cl. 73—304 C **11 Claims**



1. A fluid gauging system of the kind including a capacitance sensor adapted for immersion within a fluid, a supply unit that supplies an alternating input signal to said sensor such that said sensor provides an alternating output signal that varies in accordance with change in fluid quantity, and a detector circuit that receives said output signal, the improvement wherein said system includes switching control means that receives a sample of said input signal, and wherein the detector circuit includes a first switching device having first and second inputs and an output, means supplying the output signal of said sensor to the first input of said first switching device, said switching control means being coupled to the second input of said first switching device to cause switching of the said first switching device and thereby connection of the first input with said output in synchronism and in quadrature with said input signal to said sensor, such that the first switching device passes to its output only a unidirectional current component of said output signal representative of said fluid quantity, amplifier means, and means for supplying said unidirectional current component from the output of said first switching device to said amplifier means such that said amplifier means provides a d.c. signal the amplitude of which varies in accordance with said fluid quantity.

4,583,403
Patent Not Issued For This Number

4,583,404
ELECTROSTATIC ACCELEROMETER
Alain M. Bernard, Fresnes, and Bernard Sacleux, Plessis Robinson, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.), France
Filed Feb. 28, 1984, Ser. No. 584,405
Claims priority, application France, Feb. 28, 1983, 83 03257
Int. Cl.[4] G01P *15/125, 3/44*
U.S. Cl. 73—517 B **3 Claims**



1. A tridimensional electrostatic accelerometer comprising:
a cube-shaped test weight having six faces;
a pair of conducting electrodes on each of the six faces of said cube-shaped test weight, two of said electrodes being adjacent on each face and the electrodes on two parallel faces of the cube being opposite two by two, whereby each first electrode on a face has an adjacent second electrode on the same face, an opposite third electrode on the parallel face and a diagonally opposite fourth electrode on said parallel face, the electrodes thereby forming three sets of four electrodes, each set comprising one of said first electrodes, one of said adjacent second electrodes, one of said opposite third electrodes and one of said diagonally opposite fourth electrodes, each of said sets being respectively associated with a given one among three orthogonal coordinate axes;
a hollow cage accomodating said test weight;
twelve electrodes on said cage, forming with the test weight electrodes three sets of four capacitors C_{ij}, where i varies from 1 to 4 and j is selectively each x, y and z, respectively associated with said orthogonal coordinate axes;
means for measuring for each value of j the quantities

$$(C_1-C_2)_j(C_3-C_4)_j$$

$$(C_1+C_2)_j(C_3+C_4)_j;$$

means for forming with said above quantities signals indicative of:

$$V_{tr,j}=(C_1+C_3)_j-(C_2+C_4)_j$$

$$V_{rot,j}=(C_3-C_4)_j-(C_1-C_2)_j;$$

means responsive to the signals representing $V_{tr,j}$ and $V_{rot,j}$ for:
applying a voltage proportional to $-V_{tr,j}+V_{rot,j}$ across the capacitor including said first electrode of an electrode set,
and applying a voltage proportional to $V_{tr,j}-V_{rot,j}$ across the capacitor including said third opposite electrode of said set,
and applying a voltage proportional to $V_{tr,j}+V_{rot,j}$ across the capacitor including said second adjacent opposite electrode of said set,
and applying a voltage proportional to $-(V_{tr,j}+V_{rot,j})$ across the capacitor including said fourth diagonally opposite electrode of said set.

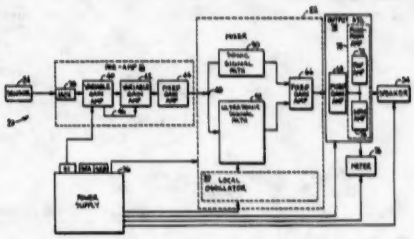
4,583,405
TESTING DEVICE
Levy M. Simmons, Rte. 1, Box 175, Ashe, N.C. 28420
Filed Jun. 4, 1984, Ser. No. 616,656
Int. Cl.[4] G01H *11/06*
U.S. Cl. 73—584 **14 Claims**

1. A testing device comprising: an elongated probe; a handle mounted on one end of said probe; an audible frequency pick-up mounted on the end of said probe opposite said handle for picking up sounds generated by a defective element of a fluorescent light fixture; a housing structure; an amplifier mounted within said housing structure; means for operatively connecting said pick-up to said amplifier; and signal means operatively connected to said amplifier for signaling to a user when there is a defective element.

4,583,406
SIGNAL PROCESSOR
John Dimeff, San Jose, Calif., assignor to Mark Telephone Products, Inc., Santa Clara, Calif.
Filed May 30, 1984, Ser. No. 615,194
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—59 L **21 Claims**

16. A signal processor for producing an audible response to receipt of a composite signal having a sonic frequency component, an ultrasonic component, or both, the signal processor comprising:
input means coupled to receive the composite signal;
first circuit means for producing a local oscillator signal consisting of a fundamental frequency and signal components of a plurality of harmonics of the fundamental frequency;
second circuit means coupled to the input means to receive the composite signal, and operable in response to the local oscillator signal for producing difference frequency signals from ultrasonic components of the composite signal in the

frequency range of 15 KHz–100 KHz, the difference frequency signals being in the range of 0–15 KHz; and



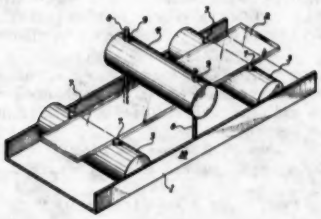
third circuit means coupled to the second circuit means for converting the difference signal to said audible response.

4,583,407

METHOD FOR ACCELERATING THE FAILURE OF COATINGS

Donald G. LeGrand, Burnt Hills, and William V. Olszewski, Stillwater, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 21, 1984, Ser. No. 612,529
Int. Cl.⁴ G01N *3/20*
U.S. Cl. 73—762 **7 Claims**



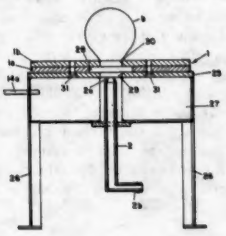
1. A method for predicting the useful lifetime of a coated substrate which comprises subjecting said substrate to a controlled level of stress while simultaneously exposing it to a Florida test and measuring the time required to detect failure.

4,583,408

APPARATUS TO EVALUATE BUBBLE FORMATION

Francois Boudy, Champs-sur-Marne, France, assignor to General Foods France, Reuil Malmaison, France

Filed Apr. 9, 1984, Ser. No. 597,962
Claims priority, application France, Apr. 12, 1983, 83 05948
Int. Cl.⁴ G01N *3/10*
U.S. Cl. 73—840 **12 Claims**



1. Apparatus to determine the film-forming properties of a paste sample, especially a paste of chewing gum or bubble gum in order to evaluate its ability to form bubbles, said apparatus comprising:

plate means including a lower plate having a recess for a sample under test and an upper counter-plate located on the lower plate, said counter-plate also being perforated with an opening located opposite the said recess;

means to bring the plate means to and maintain it at the temperature desired for the test;

a nozzle arranged at a certain distance beneath said lower plate the axis of said nozzle corresponding to the centres of the openings in said plate and counter-plate;

means to supply air under pressure to said nozzle;

means to control the pressure, and possibly the flow rate, of the air supply to said nozzle; and

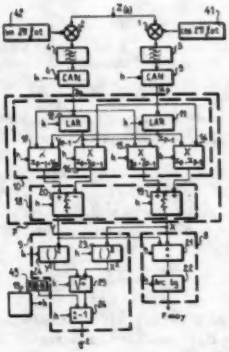
means to determine the variation in the pressure, as a function of time, at the bubble formed in said sample.

4,583,409

METHOD FOR MEASURING THE FLOW PARAMETERS OF A FLUID AND DEVICE UTILIZING THE METHOD

Olivier Lannuzel, Meaux, and Thierry Pradal, Cretell, both of France, assignors to CGR Ultrasonic, France

Filed Aug. 20, 1984, Ser. No. 642,282
Claims priority, application France, Aug. 24, 1983, 83 13658; Dec. 16, 1983, 83 20198
Int. Cl.⁴ G01F *1/74*
U.S. Cl. 73—861.25 **12 Claims**



1. A method of measuring the flow parameters of a fluid, comprising the steps of:

(a) transmitting periodically at a recurrent frequency a pulsed signal oscillating at an acoustic frequency to a cell;

(b) receiving from the cell the pulsed acoustic signal reflected thereby;

(c) demodulating the received signal in phase quadrature by two oscillators for producing two demodulated signals;

(d) filtering and quantifying each of the two demodulated signals for producing a complex sampled signal, the complex sampled signal including a real part and an imaginary part;

(e) using a number of samples of the complex sampled signal for calculating a discrete autocorrelation function of the complex sampled signal; and

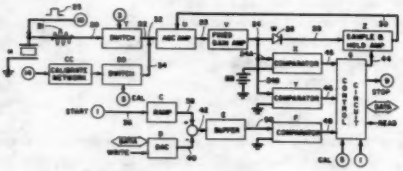
(f) calculating the derivations of order n of the autocorrelation function for obtaining the flow parameters of the fluid, n being a positive integer.

4,583,410

TIMING CIRCUIT FOR ACOUSTIC FLOW METERS

Jeffrey C. O'Neil, Tulsa, Okla., assignor to Nusonics, Inc., Tulsa, Okla.

Filed May 29, 1984, Ser. No. 614,566
Int. Cl.[4] G01F *1/66*
U.S. Cl. 73—861.28 **11 Claims**



1. The method of measuring the time of travel of a first wavelet of ultrasonic energy in a liquid from the first time instant of generating said first wavelet by a first transducer at a first point until the reception of said first wavelet by a second transducer at a second spaced point in said liquid, comprising:

(a) transmitting said first wavelet of ultrasonic energy at said first instant of time from said first transducer to a second transducer positioned at a second spaced point in said liquid;

(b) detecting the arrival of said wavelet of ultrasonic energy at said second transducer, and producing a corresponding electrical signal wavelet;

(c) amplifying said electrical signal wavelet until a selected peak in said wavelet of electrical signal is a selected magnitude;

(d) determining a second time instant of the first zero crossing after said selected peak;

(e) producing a sequence of clock pulses;

(f) starting a pulse counter to count said clock pulses at said first instant of time, and stopping said counter at the completion of the last full period of a clock pulse before said second instant;

(g) starting a ramp voltage of known rate of rise at the end of the last full period of the clock pulse before said second instant; and

(h) comparing said ramp voltage with a selected reference voltage whereby from the known rate of rise of said ramp voltage and said count of said clock pulses the time interval between said first and second instants of time can be determined.

4,583,411

DYNAMIC TORQUE MONITORING DEVICE

James W. Hales, Harrison, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 27, 1984, Ser. No. 583,930
Int. Cl.[4] G01L *3/22*
U.S. Cl. 73—862.09 **5 Claims**

1. Apparatus for dynamically testing a rotational torque device under conditions simulating actual operating conditions, the rotational torque device having a rotating portion and a relatively stationary portion, comprising:

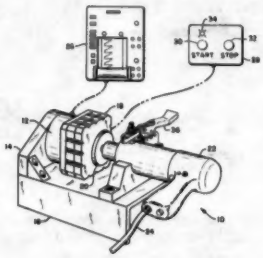
a rigidly supported load transducer means for sensing the torque produced by the rotational torque device being dynamically tested and for producing as an output a signal indicative of the torque developed by the rotational torque device;

controllable loading means cooperatiely engaged with the load transducer means for coupling with the rotational torque device being dynamically tested and for applying a controlled load to the rotational torque device;

means for initiating the loading of the controllable loading means;

circuit means responsive to the initiating means for generating an intermediate control signal, the magnitude of which increases from an initial value at a constant, predetermined rate;

circuit means for limiting the magnitude of the intermediate control signal thereby producing a magnitude limited control signal;



buffer means for receiving the magnitude limited control signal and for controlling the loading on the controllable loading means therewith so as to gradually increase the loading; and

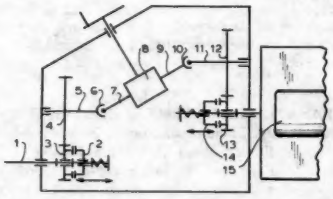
means for monitoring the signal indicative of the torque produced by the rotational torque device being tested.

4,583,412

UNIVERSAL JOINT ARRANGEMENT FOR FORMING A VARIABLE-VELOCITY DRIVE FOR DRIVING A WINDOW CUTTER ROLLER OF AN ENVELOPE MACHINE

Jürgen Jung, Bendorf, and Gerd Ruttert, Neuwied, both of Fed. Rep. of Germany, assignors to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Jun. 29, 1984, Ser. No. 626,212
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323512
Int. Cl.[4] F16H *35/02, 21/40, 21/52;* B23D *25/02*
U.S. Cl. 74—393 **1 Claim**



1. A universal joint arrangement for forming a variable-velocity drive for driving a window cutter roller of an envelope machine, said universal joint arrangement comprising:

an input to said universal joint arrangement;

an output from said universal joint arrangement;

a clutch arranged at each of said input and said output;

gearwheel pairs at said input and said output providing a ratio stepdown and a ratio stepup respectively, said gearwheel pairs causing the universal joint arrangement to run at half the speed of the window cutter roller;

a first universal joint connected to said input gearwheel pair;

a second universal joint connected to said output gearwheel pair; and

a differential device interconnecting said first and second universal joints at an angle of intersection γ to one another so that said first and second universal joints rotate relative to one another.

4,583,413

TOOTHED GEAR SYSTEM

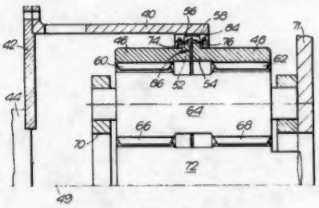
Geoffrey J. Lack, Pershore, United Kingdom, assignor to Northern Engineering Industries PLC, New Castle upon Tyne, England

Filed Feb. 27, 1984, Ser. No. 583,620

Claims priority, application United Kingdom, Mar. 1, 1983, 8305587

Int. Cl.[4] F16H *57/04*

U.S. Cl. 74—410 7 Claims



1. A toothed gear system comprising:

(a) gear wheels each having two oppositely-handed arrays of external helical teeth;

(b) two ring gears of equal diameter mounted adjacent to one another on a common axis; and

(c) an annular coupling member concentric with said ring gears and having internal spur coupling teeth;

(d) each said ring gear having an array of internal helical running teeth meshing with a respective one of said arrays of teeth on said gear wheels and having an array of external spur coupling teeth meshing with said coupling teeth of said coupling member, said arrays of coupling teeth of each said ring gear being offset from the centers of said running teeth of the respective ring gear towards said array of coupling teeth on the other ring gear;

(e) said ring gears having mutually opposed lubricated abutment surface means whereby respective transverse forces arising effectively at said centers and acting parallel to said common axis are countered by oppositely acting respective reactions exerted by said ring gears mutually one upon the other; and

(f) channel means for lubricant interconnecting the interior of said ring gears with the exterior of said ring gears.

4,583,414

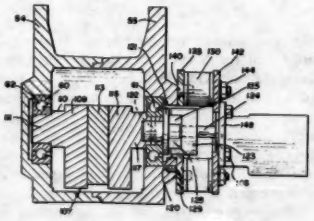
VIBRATION DAMPENING APPARATUS FOR MOTOR ACTUATED ECCENTRIC FORCES

Theodore S. Wadensten, P.O. Box 8, Stilson Rd., Wyoming, R.I. 02898

Division of Ser. No. 418,404, Sep. 15, 1982, which is a continuation-in-part of Ser. No. 196,310, Oct. 14, 1980, abandoned. This application May 29, 1984, Ser. No. 614,657

Int. Cl.[4] F16H *33/10*

U.S. Cl. 74—87 6 Claims



1. A vibration damping apparatus for mechanism in which at least one eccentric weight is carried on and by a rotating shaft isolated from transmitting vibrations to a motor rotating said shaft, the damping apparatus including:

(a) an independent housing having a cavity within which at least one eccentric weight is moved and rotated;

(b) a support shaft rotatably carried within and by said indepedent housing;

(c) at least one eccentric weight secured to said shaft and rotated as the support shaft is rotated;

(d) anti-friction bearing means carried in a precision bored portion of the independent housing, said anti-friction bearing means in a mounted condition carrying said support shaft and secured eccentric weight so that the forces of vibration created in the rotated support shaft are transmitted to the independent housing, said bearing means having a capability for accommodating said forces of vibration;

(e) a motor including a rotor and housing and in operational use positioned adjacent the independent housing;

(f) a three-piece flexible coupling having a rigid first coupling portion mounted and secured to that end of the support shaft nearest the motor rotor;

(g) a resilient central portion of said three-piece flexible coupling, said resilient central portion adapted to transmit torque while substantially eliminating a transmission of vibration forces from said rotated support shaft;

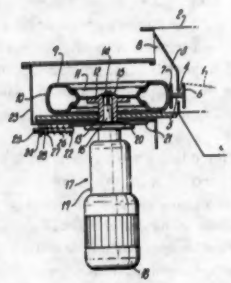
(h) a second rigid coupling portion mounted on and secured to an output shaft of said motor, said second rigid coupling adapted to engage said resilient central portion of the coupling portion and transmitting torque from said motor to said coupling, with the resilient central portion providing a damping of vibrations produced from the rotation of the eccentric weight, thus substantially eliminating transmittal of said forces of vibration from the support shaft to the motor shaft, said three-piece flexible coupling when mounted and assembled providing rotational alignment of said support shaft and motor rotor, and

(i) a plurality of isomodes interposed between the motor housing and independent housing, said isomodes attached through a second plate fastened to said motor housing by securing means and with these same isomodes also secured to the independent housing by a first plate and securing means, said securing means for the second and first plate independent of each other so that the plurality of isomodes in a second position and condition provide a desired alignment and positioning of the support shaft and motor rotor, each of said plurality of isomodes having one end secured to a first plate secured to the driving end of the independent housing and the other end of each of said isomodes attached to said second plate, this plurality of isomodes axially positioned in an array so that each isomode is essentially equidistant from the axis of said motor shaft while providing damping of the vibration forces from transmittal from the independent housing to the motor housing and at this same period of time the resilient coupling half damps transmittal of said same vibration forces from the support shaft to the motor rotor, this damping of said vibration forces developed within the independent housing to the secured and positioned motor, drastically reducing transmittal of said vibration forces so that excessive loads are not imposed on bearings carrying said motor rotor and thus preventing shortened life and a failure of said bearings carrying the motor rotor.

4,583,415
FRICTION WHEEL TRANSMISSION FOR DRIVING A ROTARY SIEVE DEVICE

Jan A. K. Locker, Steenwijk, Netherlands, assignor to C.L.M. Cooperatieve and Machinefabriek A. Wijnveen B.V. Ede, both of, Netherlands

Filed Mar. 23, 1983, Ser. No. 477,929
Claims priority, application Netherlands, Mar. 24, 1982, 8201230
Int. Cl.[4] F16H *13/00, 13/10, 13/02;* B07B *1/42*
U.S. Cl. 74—207 1 Claim



1. A rotary sieve device having a friction transmission comprising:

a housing (2, 3);

a plurality of rotatable, substantially horizontal sieve surfaces (1) rotatable about a substantially vertical axis and arranged in said housing;

a ring-shaped drive surface (7) connected to said rotatable sieve surfaces and arranged at the outside circumference (5, 6) thereof;

a pneumatic tire (9) having a running surface (10) engaging said ring-shaped drive surface (7) for driving said rotatable sieve surfaces (1), the axis of rotation of said tire extending parallel to the axis of rotation of said drive surface;

drive means (19) coupled to said pneumatic tire for rotating same; and

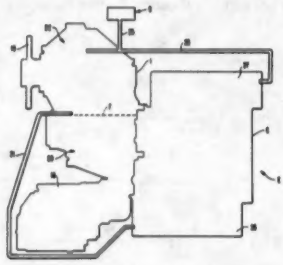
mounting means for said drive means comprising a mounting plate (20) for said drive means, said mounting plate being fastened to a slide plate linearly movable on said housing (2, 3) toward and away from siad ring-shaped drive surface (7), said slide plate having a first depending flange (22), said housing having a second depending flange (24) opposing said first depending flange, a pressure spring (26) interposed between said flanges for biasing the running surface (10) of said pneumatic tire (9) into contact with said ring-shaped drive surface (7), and means (25, 27, 28) for adjusting the bias provided by said pressure spring.

4,583,416
LUBRICATION ARRANGEMENT FOR A SPEED-REDUCTION GEAR FOR AN AIRCRAFT ENGINE

Robert Müller, Weissach, Fed. Rep. of Germany, assignor to Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed May 17, 1983, Ser. No. 495,418
Claims priority, application Fed. Rep. of Germany, May 18, 1982, 3218661
Int. Cl.[4] F16H *57/04*
U.S. Cl. 74—467 10 Claims

1. A lubrication arrangement for a reduction gear for a reciprocating piston engine in an aircraft, comprising a transmission housing means, an oil-collecting space means formed in the lower part of the transmission housing means, an engine crankcase means with an oil-collecting space means, an overflow channel means connecting the oil-collecting space means of the transmission housing means with the oil-collecting space means of the engine crankcase means, and a vent channel means initiating in an upper part of the transmission housing means and terminating in an air space of the crankcase means,

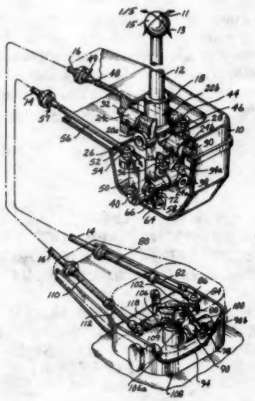


the vent channel means and the overflow channel means being dimensioned and arranged relative to one another, the transmission housing means, and the engine crankcase means in a manner such that their functions are mutually interchangeable during upside-down flights of the aircraft.

4,583,417
TWO-CABLE SHIFTING MECHANISM FOR TRANSMISSIONS

Robert H. Hurlow, Bainbridge Island, Wash., assignor to Cablecraft, Inc., Tacoma, Wash.

Filed Jun. 25, 1984, Ser. No. 623,977
Int. Cl.[4] G05G *9/16*
U.S. Cl. 74—473 R 8 Claims



1. In a dual-linkage remote shifter apparatus including a transmitter unit easily accessible by an operator of a vehicle and a receiver unit located remote from the transmitter unit adjacent a vehicle transmission, an improved transmitter unit comprising:

a casing;

an elongated control member;

first means for mounting said control member to said casing for movement of said control member about a first axis and independent movement of said control member about a second axis orthogonal to said first axis, said mounting means being constructed and arranged such that as said control member moves about said first axis said second

axis also moves about said first axis to maintain said second axis orthogonal to said control member;

a first output link coupling said transmitter unit to said receiver unit;

first linkage means coupling said control member to said first output link and operable such that motion of said control member about said first axis results in linear movement of said first output link in a direction parallel to said first axis;

a second output link independent of said first output link coupling said transmitter unit to said receiver unit; and

second linkage means connecting said control member to said second output link and operable such that motion of said control member about said second axis results in linear motion of said second output link in a direction orthogonal to said second axis.

4,583,418

SELECTING MECHANISM FOR VEHICULAR TRANSMISSION OPERATING APPARATUS

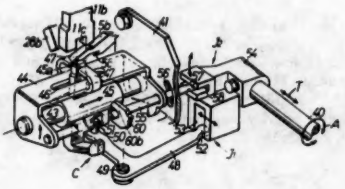
Hiroshi Nakayama, and Makoto Sumi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1984, Ser. No. 590,638

Claims priority, application Japan, Mar. 17, 1983, 58-45103; Mar. 25, 1983, 58-50153

Int. Cl.[4] G05G *9/12*; B60K *20/02*

U.S. Cl. 74—475 **9 Claims**



1. A selecting mechanism for a vehicular transmission operating apparatus including a mounting base fixed to the transmission case, a rotatable interlock plate with a slot-formed in one face, a slidable shift member with an integral shift piece protruding through the slot and a shift rod connected to a gear change lever so as to rotate and move axially, comprising, a change piece mounted on the shift rod, a selection shaft, a first end of said selection shaft being fixed to the interlock plate, the second end of said selection shaft being slidably and rotatably connected to said change piece, an arcuate hole formed in the mounting base plate to accommodate movement of said selection shaft, a selection snugness arm rotatably connected to the mounting base, said selection snugness arm having a forked end interacting with said selection shaft, a stopper plate connected to the mounting base, a spring enclosure with an open end extending through said selection snugness arm, a variable height cam face formed on the inner face of said stopper plate, a snugging member fitted within said enclosure and interacting with said cam face, means to urge said snugging member towards said cam face, means to actuate the shift member and means to maintain said selection snugging arm in its non-rotated position.

4,583,419

TORQUE TRANSMITTING HANDWHEEL CLIP-ON MEMBER FOR A SEWING MACHINE

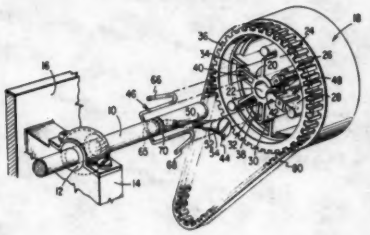
William Weisz, Tenafly, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 9, 1984, Ser. No. 669,714

Int. Cl.[4] B62D *1/04*

U.S. Cl. 74—552 **5 Claims**

1. In a sewing machine, a plastic handwheel including a central hollowed boss with a longitudinally extending slot, the handwheel also including ribs extending radially from the boss and having planar sides; a steel arm shaft extending into the boss; a screw affixed to the shaft, the screw extending radially therefrom and through said slot in the boss into a space between adjacent ribs of the handwheel; and a member mounted



between the said adjacent ribs, the member including spaced apart wings with planar sides for engagement with the planar sides of said adjacent ribs, each wing being located between one of the said adjacent ribs and the screw to transmit driving torque therebetween.

4,583,420

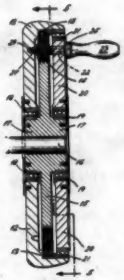
HANDWHEEL ACTUATED MACHINE TOOL MECHANISM

Bradford A. Miley, Box 71, Durham Rd., Ottsville, Pa. 18942

Filed Oct. 11, 1984, Ser. No. 660,867

Int. Cl.[4] B62D *1/04*

U.S. Cl. 74—557 **4 Claims**



1. A handwheel mechanism for a handwheel actuated machine tool comprising

a gear housing surrounding and containing:

an internally toothed ring gear affixed to said gear housing,

as least one driver pinion which engage both said ring gear and

a follower gear which is affixed to a drive shaft for said machine tool, and

a handle plate with at least one hole; and

a handle unit affixed to one of said holes containing:

a crank handle,

a securing means for attaching said handle unit to said hole,

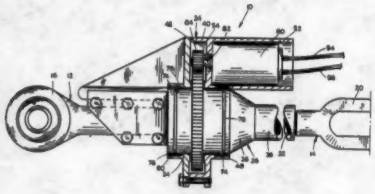
a hub for said driver pinion attached to said securing means, and

an index means attached to said crank handle and adapted to releasably engage at least one opening or recess in said gear housing.

4,583,421
POWERED ADJUSTER FOR THREE-POINT HITCH UPPER ARM

Marvin D. Rose, Rte. 4, Kearney, Nebr. 68847

Filed Jan. 11, 1985, Ser. No. 690,725
Int. Cl.[4] G05G *1/00*
U.S. Cl. 74—586 13 Claims



1. A powered adjuster for a three-point hitch upper arm including first and second oppositely threaded connection members adapted to be threadably received in the opposite ends of a manually adjustable turnbuckle, said adjuster comprising,

a housing,

a drive hub carried in said housing for rotation about a first axis, said drive hub having opposite ends with oppositely threaded openings arranged concentric with said first axis and adapted for threadably receiving the first and second connection members of a three-point hitch upper arm,

a motor,

means for supporting said motor on said housing,

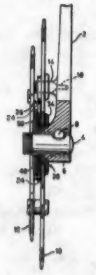
a drive connection between said motor and drive hub whereby said drive hub is rotated relative to said housing in response to actuation of said motor, and

coacting guide means on said housing and attachable to at least one of said first and second connection members of the upper arm for generally preventing relative rotation between said housing and said one of first and second connection members while permitting relative axial sliding movement therebetween.

4,583,422
PEDAL CRANK AND CHAIN WHEEL ASSEMBLY FOR BICYCLES

Winnett Boyd, 32 Restwell Crescent, Willowdale, Ontario, Canada

Filed Sep. 20, 1982, Ser. No. 420,695
Int. Cl.[4] G05G *1/14;* B62M *1/02;* F16D *41/24*
U.S. Cl. 74—594.2 5 Claims

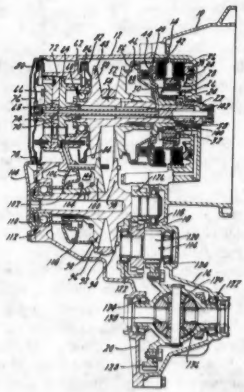


1. A pedal crank and chainwheel combination for a bicycle, comprising a pedal crank having a crankshaft end, a chain wheel coacting with and inwardly adjacent the pedal crank, a lost motion coupling including means supporting the chain wheel on the crankshaft end for relative motion about the axis of the crankshaft, and torque responsive means acting between the pedal crank and the chain wheel to take up the lost motion of the lost motion coupling, the means supporting the chainwheel comprising an annular chain wheel carrier concentric with the chain wheel, a shoulder formed at the crankshaft end of the pedal crank and restraining the chain wheel carrier against radial or axially outward movement, the chain wheel carrier having a hub with an external cylindrical bearing surface engaging an internal periphery of the chain wheel, and a flange with an annular surface engaging an outer surface of the chain wheel in an annular zone, a resilient annular washer on its outward facing surface, an inner annular support surface engaging the carrier hub and an outer annular support surface engaging an inner surface of the chain wheel in an annular zone spaced outwardly of said internal pheriphery, an external screw thread formed on said crankshaft end concentric with the chain wheel and inward of the shoulder, and a nut engaged with the screw thread and having an annular land engaging an inner surface of the annular washer radially outward of its inner annular bearing surface to deform the washer into a frustum of a cone, whereby to take up play between the chain wheel, the outer annular support surface of the washer and the annular support surface of the carrier, and prevent relative motion of the chainwheel and the crankshaft other than about the axis of the latter.

4,583,423
INFINITELY VARIABLE TRANSMISSION FOR AUTOMOTIVE VEHICLE DRIVELINE

Dieter Hahne, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 21, 1984, Ser. No. 581,630
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 3306361
Int. Cl.[4] F16H *37/08, 11/06*
U.S. Cl. 74—689 4 Claims



1. In an infinitely variable transmission for use in an automotive vehicle driveline having a fluid pressure operated clutch means for establishing and disestablishing a torque flow path through said transmission;

a driving shaft, a first fixed sheave connected to said driving shaft, clutch means for connecting the driving shaft to a torque input shaft, a first movable sheave mounted on said driving shaft and cooperating with said first fixed sheave to define a driving sheave assembly;

an intermediate shaft and a second fixed sheave carried on said intermediate shaft, a second movable sheave slidably mounted on said intermediate shaft and cooperating with

said second fixed sheave to define a driven sheave assembly;

a drive belt drivably connecting said driving sheave assembly and said driven sheave assembly;

an output torque differential gear mechanism, final drive gearing connecting said intermediate shaft to said differential gear assembly;

a positive displacement pump, a drive shaft for said pump extending through said driving shaft, a first overrunning coupling means connecting drivably said pump drive shaft and said driving shaft and a second overrunning coupling connecting drivably said torque input shaft and said pump drive shaft, each overrunning coupling assembly being adapted to distribute torque therethrough to said pump drive shaft in the same direction whereby said pump is driven regardless of the direction of torque delivery through said torque transmitting drive belt;

a fluid pressure clutch servo means for operating said clutch means and a hydraulic connection between said pump and said clutch servo means whereby the latter is actuated to effect torque transfer to said engine when the direction of torque delivery through said transmission mechanism is reversed.

4,583,424

LIMITED SLIP DIFFERENTIAL WITH LOCKING CLUTCH OPERATED BY AN EXTERNAL ACTUATOR OF THE AXIAL PISTON-CYLINDER TYPE

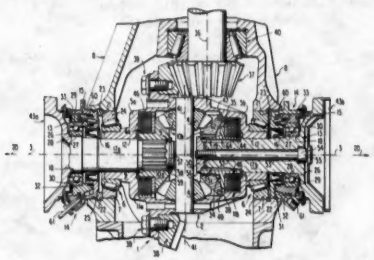
Götz von Hiddessen, Uhingen, and Dieter Wachtel, Korb, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Mar. 8, 1984, Ser. No. 587,510

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313283

Int. Cl.⁴ F16H *1/44*

U.S. Cl. 74—710.5 **12 Claims**



1. A limited slip differential comprising a differential gear housing in which a differential bevel gear rotating in relation to a geometrical main axis is supported by a rolling contact bearing arrangement in a bearing opening of an axle casing and also has an inner locking clutch which operatively connects half-shaft bevel gear meshing with the differential bevel gear to the differential gear housing and which is disposed concentrically to the main axis and axially between an axle abutment immovable relative to the differential gear housing and an axially movable pressure disc, the said clutch being adapted to be engaged, in the direction of the main axis pointing from the pressure disc to the axial abutment, by a half-shaft part which passes outwards through an opening in the differential gear housing and which is operated with the aid of a rolling contact bearing by an annular actuator of the axial piston-cylinder type which is disposed, in the proximity of the rolling contact bearing arrangement of the journal, on the axle casing concentrically to the main axis, said half-shaft part being rotationally fixed to the half-shaft bevel gear and passing outwards through the journal, wherein the actuator is disposed on the side of the rolling contact bearing arrangement opposite to the locking clutch and also acts on a thrust bearing surface lying axially outside the journal of the half-shaft part used as pressure member, while the half-shaft part has another thrust bearing surface which acts on a pressure disc on engagement of the locking clutch.

4,583,425

COMPACT HYDRAULIC DRIVE MECHANISM FOR WHEEL ASSEMBLIES

Egon Mann, and Helmut Eymuller, both of Friedrichshafen, Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

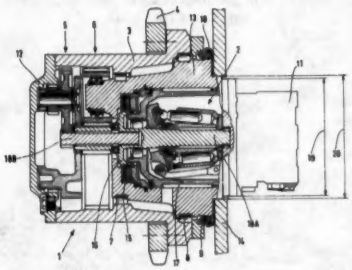
PCT No. PCT/EP83/00125, § 371 Date Apr. 25, 1984, § 102(e) Date Apr. 25, 1984, PCT Pub. No. WO84/01136, PCT Pub. Date Mar. 29, 1984

PCT Filed May 11, 1983, Ser. No. 606,823

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235378

Int. Cl.⁴ F16H *47/00*

U.S. Cl. 74—730 **11 Claims**



1. A driving mechanism, for use as a traction motor in a working vehicle, including a housing **17** encompassing a hydromotor **(2)**, said hydromotor **(2)** having a rotary output means **(18A, 18B)**, at least one planetary gearing **(5** or **6)** connected to the outlet means to drive a hollow wheel means **(3)** adapted for torque delivery to a main driving wheel of said vehicle, wherein for absorbing external bearing pressures the hollow wheel is supported by bearings **(7, 8)** on a hub support **(13)** which also serves as a supporting member for said planetary gearing, and which encompasses and supports said support **(17)**, containing said hydromotor **(2)**, and a transmission brake **(15)** disposed axially of said hydromotor and said brake **(15)** is situated around a bearing of said hydromotor **(2)**.

4,583,426

CONTINUOUS TORQUE TRANSMISSION WITH MANUAL TRANSMISSION AND CONVERTER

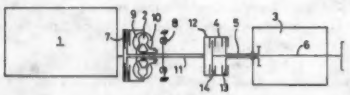
Clément Chassagnette, Lozanne, and Philippe Quemerais, Thurins, both of France, assignors to Renault Vehicules Industriels, Lyons, France

Filed Jun. 28, 1984, Ser. No. 625,850

Claims priority, application France, Jun. 28, 1983, 83 10642

Int. Cl.⁴ F16H *47/08*

U.S. Cl. 74—733 **2 Claims**



1. A process for controlling a continuous torque transmission having a torque converter, a manual transmission and a double clutch with a driving member connected to said torque

converter and with first and second driven members, said first driven member being connected to an input of said manual transmission, said second driven member being connected to any point of the kinematic chain of said torque transmission downstream of said manual transmission input, said process comprising the steps of:

releasing said first driven member to terminate torque transmission to said input;

engaging said second driven member to initiate torque transmission to said any point;

shifting gears of said manual transmission;

releasing said second driven member to terminate torque transmission to said any point; and

engaging said first driven member to initiate torque transmission to said input.

4,583,427

GEAR BOX

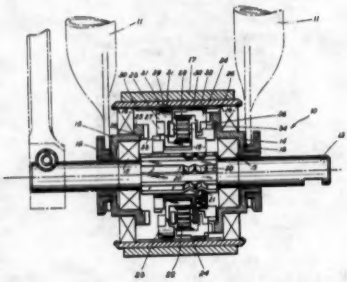
Lee D. Blattmann, Paddington, Australia, assignor to Tamille Pty. Limited, Guildford, Australia

Filed Mar. 22, 1985, Ser. No. 715,184

Claims priority, application Australia, Mar. 23, 1984, PG4219

Int. Cl.[4] F16H *3/44*

U.S. Cl. 74—760 **7 Claims**



1. A planetary gear arrangement comprising a shaft, a carrier mounted on the shaft so as to rotate therewith, said carrier being movable longitudinally of the shaft between a first and a second position, a plurality of planetary gears rotatably mounted on the carrier so as to be rotatable about axes generally parallel to said shaft but spaced radially therefrom, a sun gear meshingly engaged with said planetary gears to positions radially inwardly of the axis of said planetary gears relative to said shaft, a ring gear meshingly engaged with said planetary gears at positions radially outward of said axes of said planetary gears relative to said shaft, and wherein said sun gear and ring gear are rotatably supported on said carrier so as to be longitudinally movable with said carrier along said shaft, and said planetary gear arrangement further includes brake means to engage said sun gear when said carrier is in said first position to thereby hold said sun gear stationary so that said ring gear is free to rotate, and to engage said ring gear when said carrier is in said second position to thereby hold said ring gear stationary so that said sun gear is free to rotate.

4,583,428

WHEEL HUB WITH INTEGRAL PLANETARY SPEED REDUCER

Michel Garnier, Courbevoie, France, assignor to SO.M.A. Europe Transmissions Societe Nouvelle Mecanique et Automobile, Saint Ettenne, France

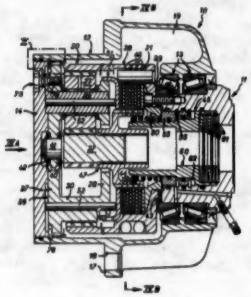
Filed Nov. 2, 1983, Ser. No. 547,900

Claims priority, application France, Nov. 3, 1982, 82 18403

Int. Cl.[4] F16H *3/44, 57/10*

U.S. Cl. 74—785 **9 Claims**

1. A wheel hub with an integral planetary speed reducer, said wheel hub comprising an overall tubular hollow body mounted to rotate on a support sleeve, said planetary speed reducer being disposed inside said hollow body for reducing the rotational speed of an input shaft transmitted to said hollow body, said planetary speed reducer including a pinion carrier, planetary gears carried by said pinion carrier, a ring gear



meshed with said planetary gears, a splined connection between said pinion carrier and said hollow body and including splines formed directly on said pinion carrier and at the outer periphery of said pinion carrier radially outwardly of said ring gear cooperating with complementary splines formed on a facing internal wall portion of said hollow body.

4,583,429

TAB TOP CAN OPENER

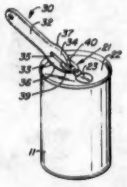
Daniel E. Kroeger, 511 Sycamore, Hayward, Calif. 94544, and Robert C. Anderson, 6215 Manthey Rd., French Camp, Calif. 95231

Filed Oct. 2, 1980, Ser. No. 193,246

The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.

Int. Cl.[4] B67B *7/40*

U.S. Cl. 81—3.55 **2 Claims**



1. An opener device for use with a can opening tab releasably sealed to a can surface, said device comprising a unitary member having a handle portion adapted to be gripped by a user, and a working end portion, said working end portion having first and second relatively inflexible nose portions extending in a generally mutually parallel direction, said second nose portion terminating in a free end and having a length less than the length of said first nose portion, said first nose portion having a curved convex outer working surface terminating in a free end with a thickness dimension sufficiently small to permit insertion thereof between said tab and said can surface so that subsequent rotation of said handle portion in a plane substantially perpendicular to said can surface causes said convex outer working surface to bear against said can surface and provide a lifting force of sufficient magnitude to raise said tab away from said can surface, said nose portions being separated by a slot dimensioned to receive said tab to permit said tab to be engaged with said slot with the first nose portion extending along the top of said tab and the second nose portion extending along the bottom of said tab so that advance-

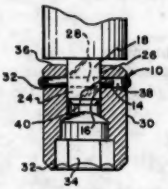
ment of said first and second nose portions over said tab and rotation of said handle portion in said plane provides an opening force of sufficient magnitude to rupture the seal between said tab and said can surface.

4,583,430

METAL SHIELDED RETAINING RING

D. Gray Farley, 4597 Chelsea Ct., Cypress, Calif. 92008

Filed Dec. 17, 1984, Ser. No. 682,678
Int. Cl.[4] B25B *23/16*
U.S. Cl. 81—177.85 **9 Claims**



1. A retaining ring to retain a power-driven socket to the end of a shaft wherein the shaft has a transverse bore and at least one flat surface, and wherein the socket has a receptacle for the end of said shaft with at least one flat surface that mates with said flat surface on said shaft and is separated therefrom by a boundry interface, a through bore extending through the side walls of said socket to align with said transverse bore of said shaft, and a peripheral groove in the outer wall of said socket which intersects said transverse bore, which comprises:

(a) a molded elastomeric ring having a diameter to be resiliently received in said peripheral groove;

(b) a molded, integral pin dependent from the inside and extending across said ring;

(c) a short metal sleeve surrounding a portion of said pin which bridges across one boundry interface between the socket and the shaft; and

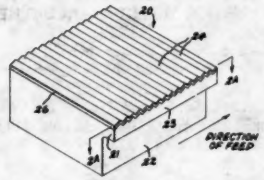
(d) integrally molded interlock means carried by said pin to restrain said sleeve against displacement thereon.

4,583,431

SELF-SHARPENING COATED TOOL CONSTRUCTIONS

Ranga Komanduri, and William R. Reed, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 3, 1982, Ser. No. 438,684
The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.
Int. Cl.[4] B23B *1/00, 27/14, 27/22*
U.S. Cl. 82—1 C **19 Claims**



19. The high-speed method for machining titanium and titanium alloys which comprises the steps of:

(a) providing and rigidly mounting a cutting tool adjacent a workpiece of titanium or titanium alloy with a cantilevered longitudinally-extending portion of said tool as the cutting element thereof, the material of said cutting element being cobalt cemented tungsten carbide having a cobalt content of less than about 6% by weight, said cutting element providing the flank and rake faces of said tool with said flank face being located a substantially uniform distance in the range of from 20 mils to 80 mils from any support for said cutting element, said cutting element (a) having a maximum substantially uniform thickness in the range of from 20 mils to 80 mils, (b) being of substantially uniform transverse cross-section along said length and (c) having at least one coating about 2–10 micrometers thick of titanium nitride metallurgically bonded to said rake face;

(b) causing relative rotation to occur between said cutting element and said workpiece;

(c) bringing the leading end of said cutting element against said workpiece;

(d) providing a clearance angle of about one degree or less between said flank face and said workpiece thereby having the trailing end of said cutting element out of contact with said workpiece, and

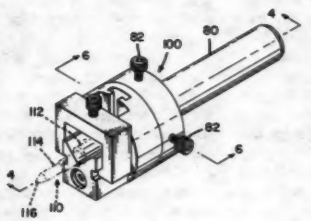
(e) advancing said tool and maintaining contact between the leading end of said cutting element and said workpiece as metal is removed from said workpiece and said cutting element is consumed along the length thereof.

4,583,432

SUPERCENTERING WORKPIECE HOLDER

Michael W. Bricker, Brodbecks, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 1, 1984, Ser. No. 667,244
Int. Cl.[4] B23B *1/00, 3/36*
U.S. Cl. 82—1 C **19 Claims**



1. A tooling assembly for securing an article to a concentrically rotatable cylinder of a work apparatus for the performance of a work step associated with said article and centering a concentric cylindrical work portion of said article with respect to said rotatable cylinder, said work portion defining a longitudinal central axis of said article, said article having a peripheral longitudinal reference surface parallel to said central axis, and at least a portion of said reference surface being remote from said work portion, said assembly comprising:

a centering subassembly means securing at a forward end thereof said portion of said reference surface of said article remote from said work portion and said subassembly means being axially referenced with said reference surface of said article, said work portion of said article extending forwardly from said forward end of said subassembly means, said centering subassembly means of having a centering projection means at a rearward end thereof having a central axis axially referenced to said reference surface of said article and having a plurality of outwardly facing flat adjustment surface portions which are disposed in respective planes about said central axis which planes are parallel to said central axis;

an adjustable holding means to which said centering subassembly means is securable at a forward end thereof in an axially referenced relationship, said holding means having an adjustment portion, a plurality of adjustment means circumferentially disposed about said adjustment portion,

and a rearwardly extending clamping projection coaxial with a central longitudinal axis of said adjustable holding means for being grippingly secured by a cooperating holding means at a work end of said rotatable cylinder of said apparatus, wherein said adjustment portion is circumferentially disposable about said centering projection means of said centering subassembly means, each of said adjustment means extends inwardly through an associated cooperating hole means of said adjustment portion to engage a respective adjustment surface portion of said centering projection means, said plurality of adjustment means capable of cooperating to firmly secure said centering projection means against axially normal motion, each of said adjustment means having an operator-accessible head portion to enable incremental adjusting movement along said inward direction;

and a securing means securing said centering subassembly means to said adjustable holding means against axially parallel movement and permitting axially normal movement of said centering subassembly means with respect to said adjustable holding means.

16. A method of centering an article relative to a concentrically rotatable cylinder, said article having a concentric cylindrical work portion defining a longitudinal axis and a peripheral axially parallel reference surface, at least a portion of said reference surface being remote from said work portion, comprising the steps of:

securing said remote portion of said reference surface of said article in a forward end of a tooling assembly having a forward centering subassembly and a rearward adjustable holding means such that said work portion extends axially forwardly from said forward end, said adjustable holding means having a rearwardly extending clamping projection coaxial with a central longitudinal axis of said holding means for being grippingly secured by a cooperating holding means of said rotatable cylinder, said adjustable holding means also including an adjustment portion at a forward end thereof circumferentially disposed around a center projection means extending axially parallel rearwardly from said centering subassembly, said adjustment portion having a plurality of inwardly extending adjustment means in engagement with associated adjustment surface portions of said centering projection means, which adjustment means have operator-accessible head portions to enable incremental adjusting movement;

securing said clamping projection centrally within said rotatable cylinder;

slowly rotating said rotatable cylinder;

determining the maximum deviation from concentricity of a side surface of said work portion of said article;

adjusting a selected combination of said adjustment means to engage said associated surface portions of said centering projection means to move said centering projection means in an appropriate axially normal direction an incremental amount equal to one-half of said determined maximum deviation, whereby said work portion of said article is correspondingly moved into at least substantial concentricity with said rotatable cylinder.

4,583,433

TURNING CONTROL APPARATUS AND METHOD

Ryoichiro Nozawa, Tokyo, and Hideaki Kawamura, Hachioji, both of Japan, assignors to Fanuc Ltd, Tokyo, Japan

Filed Apr. 5, 1983, Ser. No. 482,302
Int. Cl.[4] B23B *1/00, 5/46*
U.S. Cl. 82—1 C **7 Claims**

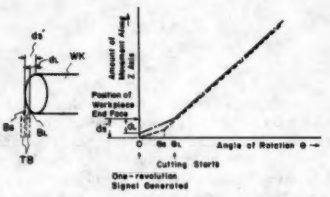
1. A turning control apparatus for controlling cutting of a workpiece connected to and rotated by a spindle having an axis corresponding to a Z-axis, a cutting tool cutting the workpiece in multiple cutting operations as relative positions of the cutting tool and the workpiece change in synchronization with rotation of the spindle, said apparatus comprising:

sensing means for sensing a rotational speed of the spindle prior to the cutting;

Z-axis movement means for controlling acceleration of relative movement of the cutting tool and the workpiece parallel to the Z-axis from non-movement to a feed speed with an associated delay and for maintaining the feed speed during the cutting of the workpiece;

calculating means, operatively connected to said sensing means, for calculating a starting position along an X-axis perpendicular to the Z-axis for a cutting approach in dependence upon the rotational speed, the rotation of the spindle and the feed speed, so that the cutting tool starts cutting the workpiece at a single angular position on each of the multiple cutting operations after the associated delay; and

X-axis movement means, operatively connected to said calculating means, for controlling movement of the relative positions of the cutting tool and the workpiece to the starting position along the X-axis.



3. A turning control method for controlling cutting of a workpiece, connected to and rotated by a spindle having an axis corresponding to a Z-axis, a cutting tool cutting the workpiece as relative positions of the cutting tool and the workpiece change at a feed speed, in a direction parallel to the Z-axis and in synchronization with rotation of the spindle, said method comprising the steps of:

(a) sensing a rotational speed of the spindle prior to starting the cutting;

(b) selecting a relative starting position of the cutting tool and the workpiece along an X-axis perpendicular to the Z-axis based on the feed speed and the rotational speed sensed in step (a);

(c) moving the cutting tool relative to the workpiece along the X-axis and accelerating relative movement of the cutting tool and the workpiece parallel to the Z-axis until the feed speed is reached; and

(d) starting cutting after the feed speed along the Z-axis is reached and at a substantially identical angular position of the workpiece, regardless of the feed speed.

4,583,434

ADJUSTABLE TOOL HOLDER FOR LATHES AND THE LIKE

Harry A. Moody; Don H. Skahen, both of New Fairfield, and John C. Dunn, Sherman, all of Conn., assignors to The Dunham Tool Company, Inc., New Fairfield, Conn.

Continuation of Ser. No. 549,625, Nov. 7, 1983, abandoned. This application Apr. 3, 1985, Ser. No. 719,024
Int. Cl.[4] B23B *29/10*
U.S. Cl. 82—36 R **6 Claims**

1. An adjustable tool holding block which comprises

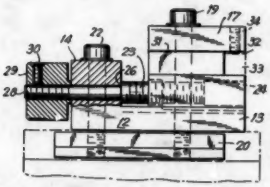
(a) a reference number,

(b) clamping means for adjustably securing said reference member to a machine tool slide member, comprising an elongated clamping bar slideably receivable in said slide member and a first clamping bolt extending through said reference member and engaging said clamping bar for fixing the position of said reference member and clamping bar,

(c) a tool holding block,

(d) means mounting said tool holding block for slideable adjusting movement toward and away from said reference member,

(e) movable adjusting means associated with said reference member and connecting said reference member and said tool holding block, for adjustably moving said tool holding block, toward and away from the reference member, and



(f) a second clamping bolt extending through said tool holding block and engaging said elongated clamping bar, to directly clamp said tool holding block to said machine tool slide,

(g) said first clamping bolt securing said reference means entirely independently of said tool holding block.

4,583,435

SLAB-CUTTING MACHINE

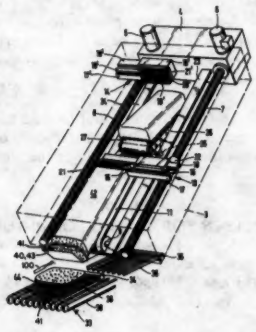
Ewald Fessler, Heimenkirch, Fed. Rep. of Germany, assignor to Natec Reich, Summer GmbH. & Co. KG., Heimenkirch, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,839

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239178

Int. Cl.[4] B26D 7/06

U.S. Cl. 83—90 **6 Claims**



1. A machine for cutting successive elongated articles into slices, which comprises:

cutter means for cutting slices from each of the successive elongated articles as the article is fed relative to the cutter means;

inclined feed conveyor means adjacent the cutter means for supporting each of the successive elongated articles as the article is fed relative to the cutter means;

storage conveyor means movably mounted adjacent an upper end of the inclined feed conveyor means for storing a next succeeding article in readiness for a slicing operation, the storage conveyor means being movable between a lower storage position below a conveying plane of the inclined feed conveyor means and a position in the conveying plane of the feed conveyor means for feeding the next succeeding article onto the feed conveyor means;

first and second article gripping means for gripping upper ends of respective alternate ones of the successive elongated articles to control movement of the articles on the feed and storage conveyor means;

drive means for incrementally advancing the first and second article gripping means, to advance each of the gripped articles on the inclined feed conveyor means relative to the cutter means in increments corresponding to a desired thickness of the slices to be cut from the article;

means for retracting each of the first and second article gripping means to a respective retracted position in which the article gripping means grips an upper end of the next succeeding article on the storage conveyor means after the storage conveyor means has been moved into the conveying plane of the inclined feed conveyor means;

retractable stop means adjacent a front end of the storage conveyor means for precluding feeding of the next succeeding article on the storage conveyor means onto the inclined feed conveyor means until one of the article gripping means has gripped the upper end of the article;

means for moving the storage conveyor means between its article storage position and its position in the conveying plane of the inclined feed conveyor means;

means on the storage conveyor means for moving the retractable stop means between operative and retracted positions; and

means below the cutter means for catching the slices cut from the elongated articles by the cutter means.

4,583,436

APPARATUS FOR TRIMMING ARTICLES MOLDINGLY FORMED ON PLASTIC SHEET

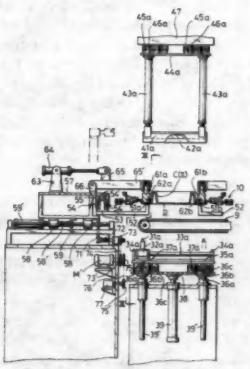
Kazuo Asano, Nagoya, Japan, assignor to Kabushiki Kaisha Asano Kenkyusho, Aichi, Japan

Filed Aug. 21, 1984, Ser. No. 642,980

Claims priority, application Japan, Dec. 23, 1983, 58-247406

Int. Cl.[4] B26D 7/02

U.S. Cl. 83—104 **13 Claims**



1. Apparatus for trimming a plastic sheet on which articles are formed comprising a frame means disposed at a cutting station, first knife means mounted on said frame means for movement in a longitudinally direction, first drive means operably connected to said first knife means for driving said first knife means in said longitudinal direction, said first knife means comprising a plurality of first knife-support means each supporting a first cutting knife, said first knife means further comprising adjusting means for adjusting the transverse position of said first knife-support means, second knife means mounted for

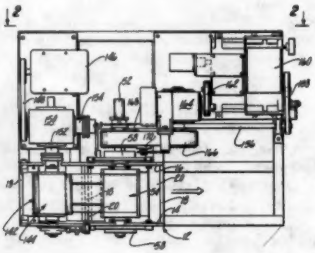
movement in a transverse direction, second drive means operably connected to said second knife means for driving said second knife means in said transverse direction to cut said plastic sheet in said transverse direction, said second knife means comprising a plurality of second knife-support means each supporting a second cutting knife, said second knife means further comprising second adjustment means for adjusting the longitudinal position of said second knife support means, and actuating means for moving said second knife means between a severing position wherein said second knives engage said plastic sheet to cut the latter in said transverse direction as said second knife means are driven by said drive means and a retracted position wherein said second knives are disengaged from said plastic sheet, whereby said first and second knife means are operable to cut said plastic sheet in both longitudinal and transverse direction to thereby cut out desired portions from said plastic sheet.

4,583,437

ROTARY CUTTER

Robert R. Rader, and David Yanik, both of P.O. Box 96, 1105 Twenty-Fourth St., Port Huron, Mich. 48060

Filed Apr. 2, 1984, Ser. No. 596,142
Int. Cl.[4] B23D *25/00*
U.S. Cl. 83—304 **10 Claims**



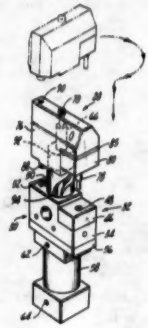
1. A machine for severing a continuous web into successive individual plates comprising, a rigid support frame, a rotary cylindrical anvil journalled on said frame for rotation about a rigidly fixed axis, a pair of laterally spaced plates supported on said frame for sliding movement in parallel planes perpendicular to the axis of rotation of the anvil, a shaft extending between said plates along an axis accurately parallel to the axis of rotation of the anvil, a pair of bearings fixedly mounted on said plates and in which said shaft is journalled for rotation, means for rotating said shaft, a drum supported on said shaft to rotate therewith, said drum having cylindrical surface portions which, when the drum is in operative position, are in rolling engagement with cylindrical portions of the anvil, a plurality of radially oriented knife blades extending axially of the drum and which, when the rotating drum is in operative position, cooperate with the outer periphery of the anvil to sever a web fed therebetween, rigid means extending across said interconnecting said plates at a location spaced from the anvil and drum, means for displacing said interconnecting means to shift the plates in a direction to move the drum to operative position in rolling engagement with the anvil and to an inoperative position wherein the periphery of the drum is spaced radially from the periphery of the anvil, and said displacing means has a first link pivotally mounted on said frame about a first axis, means for rotating said link through a limited arcuate extent, a toggle link pivotally connected adjacent one end to said rigid interconnecting means about a second axis and pivotally connected adjacent its other end to the rotatable link about a third axis spaced from said first axis.

4,583,438

PIERCING UNIT WITH ROTATING HEAD

Kenneth W. Kane, 38344 Mast, Mt. Clemens, Mich. 48044

Filed Oct. 19, 1983, Ser. No. 543,311
Int. Cl.[4] B26D *5/16*
U.S. Cl. 83—555 **7 Claims**



1. Apparatus for piercing a workpiece, said apparatus comprising:

A. a base assembly;

B. a die fixedly positioned on an upper surface of said base assembly;

C. a head supported from beneath by said base assembly and having a portion extending in cantivlever fashion over said die from the region of support;

D. a punch element extending downwardly from the under surface of said cantilevered head portion for punching coaction with said die;

E. means for moving said head downwardly and upwardly relative to said base assembly so as to move said punch element into and out of punching coaction with said die;

F. means operative in response to such upward movement of said head to rotate said head relative to said base assembly to a position in which said head is totally removed from the vertical projection over said die so as to allow ready access to said die for loading and unloading of workpieces; and

G. locating means on said head and on said base assembly that cooperate with each other to align said punch element with said die during piercing of the workpiece.

4,583,439

APPARATUS FOR TINING FOODSTUFFS

Lorne J. Reesor, Maple, Canada, assignor to Weston Bakeries Limited, Toronto, Canada

Filed Apr. 27, 1984, Ser. No. 604,773
Int. Cl.[4] B26D *3/28, 4/76*
U.S. Cl. 83—867 **23 Claims**

1. Apparatus for tining bakery foodstuffs such as rolls and loaves comprising:

(a) a support frame;

(b) a conveyor on said frame for transporting items of the foodstuff in serially arranged relationship along an elongated path of travel defined by said conveyor;

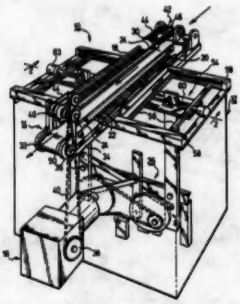
(c) a conveyor drive for moving said conveyor at a selected rate of speed;

(d) first and second tine sets mounted at opposite sides of the conveyor in opposing relationship to one another, each tine set including a plurality of tines located in spaced parallel relationship to one another;

(e) tine guide means for each of the first and second tine sets for guiding said plurality of tines as they are moved toward and away from one another;

(f) tine drive means for advancing and withdrawing the tines

of said first and second sets so that said tines move toward and away from one another along their respective paths such that as each item of foodstuff is carried along the path of travel by the conveyor it is pierced a plurality of times by said tines of said sets; and



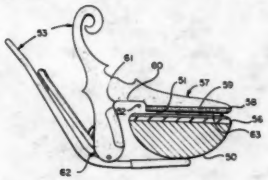
(g) means for contacting the foodstuff items as they are moved along the path of travel by the conveyor to effect incremental rotation thereof about axes normal to said conveyor during the intervals of time that the tines are withdrawn from such items so that said tines enter the items at several angularly spaced locations on each item.

4,583,440

CAPO FOR GUITAR AND BANJO

Charles B. Powell, Jr., 8324 Saddle Trail, Fort Worth, Tex. 76116

Filed Feb. 8, 1985, Ser. No. 699,941
Int. Cl.[4] G10D *3/04*
U.S. Cl. 84—318 **5 Claims**



1. A capo mountable on the neck of a stringed musical instrument, comprising:

clamp means including an upper member with an upwardly projecting portion, a horizontal string engaging portion for pressing selected strings of the musical instrument against at least one fret of the musical instrument, and a downwardly projecting leg which together with the horizontal string engaging portion defines a downwardly facing recess for receiving the neck of the musical instrument;

a lower member having a clamping end and an opposite handle end which is rotatably joined to the downwardly projecting leg at a pivot point intermediate the clamping end and handle end, the handle end extending upwardly from the pivot point and being angled away from the upwardly projecting portion of the upper member, the handle end of the lower member and the upwardly projecting portion of the upper member together forming an elevated actuating mechanism for moving the clamp means between a neck clamping position and a non-clamping position; and

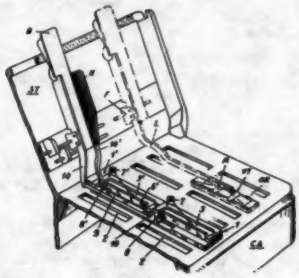
biasing means for normally urging the clamping means toward the neck clamping position.

4,583,441

BUTTERFLY VALVE FOR ACCORDIONS AND ITS DYNAMIC CONNECTION WITH THE KEY

Mario Crucianelli, Via Bramante, 1, 60022 Castelfidardo/Ancona, Italy

Filed May 9, 1983, Ser. No. 492,914
Claims priority, application Italy, Apr. 21, 1983, 48138 A/83
Int. Cl.[4] G10D *11/00*
U.S. Cl. 84—376 K **6 Claims**



1. An improved accordian valve for an accordian which has a harmonic box, a plurality of air outlet openings in said harmonic box, a plurality of valves for opening and closing said air outlet openings, and a plurality of manually operable keys which are operatively connected to said valves so as to move said valves in response to manual actuation of said keys, said valve comprising,

a frame member which is provided with a single slot (2) opening, said frame member being mounted on the harmonic box (CA) with said slot opening positioned in correspondence with one of said air outlet openings,

a butterfly closure member (3, 3') for opening and closing said slot (2) provided in said frame member, said closure member having opposite ends which are pivotally mounted on said frame member;

a spiral spring (7, 7'), anchored to said frame member and operating on said butterfly closure member (3, 3') to close it;

a peg (8, 8') protruding laterally from said butterfly closure member, and means connected to a said key (B, N) for engaging said peg to open the valve (1, 1').

4,583,442

DRUM LATCH ASSEMBLY

Thomas H. Minor, Reseda, Calif., assignor to Remo, Inc., North Hollywood, Calif.

Filed Nov. 13, 1984, Ser. No. 670,305
Int. Cl.[4] G10D *13/02*
U.S. Cl. 84—413 **3 Claims**

1. A drum latch for connecting a pair of drum heads to a drum shell, said latch comprising, an anchor, said anchor being fixedly secured to the drum shell, a grip, said grip being substantially hollow and having at least one pair of corresponding retaining grooves formed in two parallel interior sides thereof, said grip also having an aperture in the ends thereof, a lever means pivotally connected between said anchor and said grip, a clamping means engagable with the drum heads, a first threaded rod having a head formed at one end thereof extending between said anchor and a first said clamping means and passing through a first said aperture in said grip, said first clamping means being engagable with the first drum head, a pivoting lug positioned within said corresponding pair of re-

taining grooves, a second threaded rod having a head formed on an end thereof extending between said pivoting lug and a second said clamping means engagable with the second drum

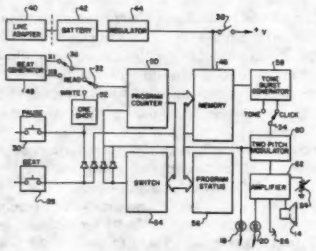
head and passing through a second said aperture in said grip and removable means to retain said pivoting lug in said retaining grooves.

4,583,443

ELECTRONIC METRONOME AND RHYTHM GENERATOR

Karl A. Senghaas, and Peter Senghaas, both of San Antonio, Tex., assignors to Harry Yokel, San Antonio, Tex.

Filed Apr. 5, 1984, Ser. No. 596,896
Int. Cl.[4] G04F 5/02
U.S. Cl. 84—484 **23 Claims**



1. An electronic metronome comprising:

(a) a solid state memory device for storing a plurality of digital logic signals;

(b) means for accessing said plurality of digital logic signals in a selected order;

(c) means for accessing said plurality of digital logic signals at a selected clock rate, said means including a manually adjustable multiple position switch for directly varying the clock rate without reprogramming said solid state memory device; and

(d) means coupled to the output of said solid state memory device for converting said plurality of digital logic signals into a plurality of audible signals.

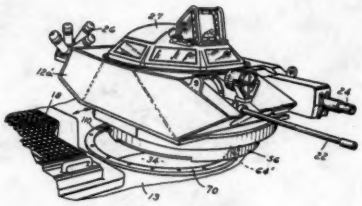
4,583,444

ARMORED VEHICLE WITH ROTATABLE SWING-AWAY TURRET

Theodore A. Jackson, Utica, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Dec. 5, 1983, Ser. No. 558,134
Int. Cl.[4] F41H 5/22, 7/02
U.S. Cl. 89—36.13 **9 Claims**

9. A method for exposing access hatch match means on an armored vehicle having a turret with portions at least partially overlying the access hatch means preventing opening thereof, comprising rotatably mounting the turret on a turret support means with the portions of the turret at least partially overlying the access hatch means, releasably mounting the turret support means on the vehicle adjacent the access hatch means using a plurality of releasably connector means, releasing the connector means while having one of said connector means



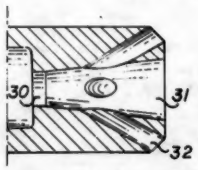
function as a pivot means for the turret support means, and eccentrically pivoting the released turret support means with turret thereon about the pivot means laterally out of the way of access hatch means to allow opening thereof.

4,583,445

FLASH REDUCING MUZZLE BRAKE

Steven M. Blair, 3333 Midway Dr., Ste. 104, San Diego, Calif. 92110

Filed Dec. 20, 1983, Ser. No. 562,541
Int. Cl.[4] F41C 21/18
U.S. Cl. 89—14.2 **4 Claims**



1. A combination muzzle brake and flash hider for installation on the muzzle of a firearm barrel comprising:

a cylindrically shaped body attachable to the muzzle in line with the axis of the barrel;

said body having an axial bore of variable radius which defines:

a mating section shaped and dimensioned for attachment to the muzzle;

following said section, an expansion chamber having an inner cross-diameter greater than the inner cross-diameter of the barrel;

following said chamber an exit throat having an inner cross-diameter commensurate with the inner cross-diameter of the barrel;

said throat expanding into a dispersion cone leading to the forward face of the cylindrically shaped body; and

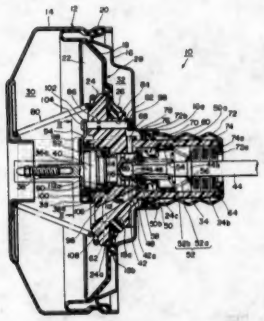
the wall of said cone having a plurality of passageways drilled into said forward face around the periphery of said cone in an rearwardly angular direction to intersect the cone at an angle relative to the axis of the barrel of between 20 and 80 degrees.

4,583,446

PNEUMATIC BOOSTER

Hideyuki Morimoto, Yokosuka, Japan, assignor to Nippon Air Brake Co., Ltd., Japan

Filed Feb. 28, 1985, Ser. No. 706,927
Claims priority, application Japan, Mar. 5, 1984, 59-32156[U]
Int. Cl.⁴ F15B 9/10
U.S. Cl. 91—369 A 6 Claims



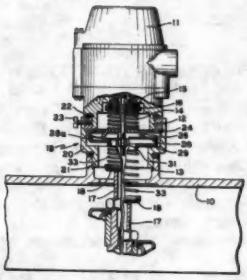
1. In a pneumatic booster comprising:
(a) a hollow body having front and rear walls and having an axis therethrough;
(b) a movable wall mounted in said hollow body to divide the interior of said body into a front low pressure chamber connectable to a low pressure source and a rear high pressure chamber communicable with a high pressure source, said movable wall being movable relative to said body along the axis thereof, said movable wall having a rear portion extending slidably through said rear wall of said body, and said movable wall having an internal bore extending therethrough and passing said rear portion;
(c) an elongated input member extending into said bore from its rear end and being movabe forwardly;
(d) a plunger mounted within said bore and connected to a front end of said input member for moving therewith, said plunger having a first valve seat at its rear end, and a second valve seat being formed on a surface of said bore;
(e) a valve member mounted within said bore for sealing engagement with said first and second valve seats, said movable wall having a first passageway for communicating said high pressure chamber with said high pressure source when said valve member is spaced from said first valve seat, and a second passageway for communicating said low pressure chamber with said high pressure chamber when said valve member is spaced from said second valve seat;
(f) an output member received in a front end of said bore;
(g) load-transmitting means interposed between said output member and said plunger for engagement with said output member at its front end and with said movable wall and said plunger at its rear end; and
(h) means for limiting a rearward movement of said plunger;
(i) whereby upon forward movement of said input member, said first valve seat is moved away from said valve member, and said plunger urges said output member forwardly via said load-transmitting means; the improvement wherein said means for limiting the rearward movement comprises at least one pin slidably extending through said movable wall along the axis of said bore and being engageable with said rear wall of said body for allowing said movable wall to move rearwardly relative to said pin; and an operating member having a major tubular portion received in the front end of said bore for sliding movement therealong, said operating member being connected to the front end of said pin for movement therewith, said output member and said load-transmitting means being received in said tubular portion, and a plurality of projections extending radially inwardly from the rear end of said tubular portion for engagement with said plunger for limiting a rearward movement of said plunger relative to said operating member.

4,583,447

PNEUMATIC DIAPHRAGM ACTUATOR WITH A PNEUMATIC POSITION CONTROLLER

Günter Hary, Rodenbach, Fed. Rep. of Germany, assignor to Honeywell GmbH, Offenbach, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 139,955
Int. Cl.⁴ F01B 31/00
U.S. Cl. 92—7 14 Claims



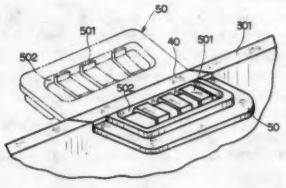
1. A pneumatic diaphragm actuator with a pneumatic position controller, wherein a displaceable driving rod of the diaphragm actuator by means of a return spring acts upon a push rod of the position controller and a force inversion device between the diaphragm actuator and the position controller in a reverse operation mode inverts the force acting upon the push rod, characterized in that the device for inversion of the force at its one side is adapted to receive the position controller and at its other side is inserted in a mounting means of the diaphragm actuator adapted to receive the position controller in a direct operation mode.

4,583,448

WINDSHIELD DEFROSTER

Toshihiro Sasaki; Yasushi Nakagawa; Kazuhiko Miyadera, and Toyokazu Hirota, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Apr. 22, 1985, Ser. No. 725,552
Claims priority, application Japan, May 14, 1984, 59-70210[U]
Int. Cl.⁴ B60H 1/24
U.S. Cl. 98—2.08 32 Claims



1. A windshield defroster assembly, comprising:
a duct which conveys heated air from a heat source to a windshield, said duct having an upper peripheral edge defining a port;
a cover plate positioned within said port, said cover plate

having at least one opening and a first edge, said cover plate being smaller than the port of said duct;

a hinge connecting said first edge of said cover plate to the upper peripheral edge of said duct, said hinge being integral with said cover plate and said duct, said cover plate being swingable about said hinge on said duct;

at least one bar crossing over said at least one opening of said cover plate, said at least one bar having two ends, each end of said at least one bar being fixed to said cover plate, whereby said cover plate and said at least one bar prevent objects from dropping into said duct.

4,583,449

COFFEE PERCOLATOR FOR SELECTIVELY MAKING NORMAL COFFEE OR ESPRESSO

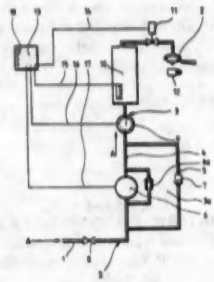
Artur Dangel, Bad Überkingen; Josef Frech, Gerstetten; Willi Niess, Lansee-Halzhausen, all of Fed. Rep. of Germany; Rolf Prillipp, deceased, late of Bad Überkingen, Fed. Rep. of Germany (by Inge Prillipp, Hanno Prillipp, Freia Prillipp, heirs); Hermann Riegert, Treffelhausen, Fed. Rep. of Germany; Gerhard Wittlinger, Geislingen, Fed. Rep. of Germany, and Siegfried Anderl, Amstetten, Fed. Rep. of Germany, assignors to Wurttembergische Metallwarenfabrik AG, Fed. Rep. of Germany

Filed Apr. 30, 1984, Ser. No. 605,111

Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316158

Int. Cl.[4] A47J *31/30, 31/34*

U.S. Cl. 99—279 **12 Claims**



1. A coffee percolator for selectively making normal coffee or esperesso, comprising:

a cold water supply inlet,

a brewing unit,

means for defining a flow path of the water between the cold water supply inlet and the brewing unit,

a metering device, and

means for heating the brewing water,

said water flow path means comprising:

an inlet valve,

a first branch including a pressure pump,

a second branch including a branch valve adapted to close for preparing espresso, and

control means adapted to activate said valves and/or said pump as required by the type of coffee to be made,

said flow path means being employed in common for the the brewing water used for making espresso and normal coffee and being divided only adjacent said pump into said first branch and said second branch.

4,583,450

COFFEE MACHINE

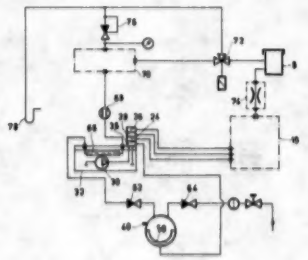
Kurt Rost, Sursee, and Ueli Casty, Bern, both of Switzerland, assignors to Cafag AG, Sursee, Switzerland

Filed Dec. 21, 1984, Ser. No. 685,176

Claims priority, application Switzerland, Oct. 11, 1984, 4873/84

Int. Cl.[4] A47J *31/34*

U.S. Cl. 99—279 **8 Claims**



1. A coffee machine comprising:

(a) a boiling chamber having water supply means,

(b) two pistons adjustable independently of each other and adapted to be pushed into the boiling chamber from opposite sides and defining between them a boiling space to hold and boil a predetermined quantity of powdered coffee,

(c) a source of boiling water having a through-flow heater and a boiling water pressure generator, and

(d) a hydraulic actuating device for the pistons having a pressurised medium circuit including a pressurised medium pump, and a pressurized medium tank,

(e) said boiling water pressure generator being constituted by a media converter of which one side is incorporated into the water supply means to the boiling chamber while its other side is connectible to the pressurised medium pump.

4,583,451

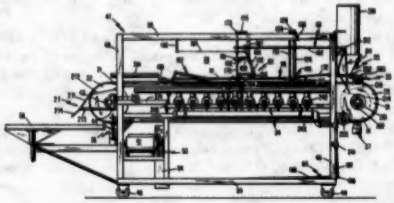
APPARATUS FOR AUTOMATICALLY COOKING PRODUCTS MADE OF BATTER, SUCH AS PANCAKES

Jonas J. Kanagy, Rte. 1, Box 122, Stuarts Draft, Va. 24477

Filed Jul. 12, 1984, Ser. No. 630,380

Int. Cl.[4] A47J *37/10*

U.S. Cl. 99—423 **37 Claims**



1. Apparatus for automatically cooking products made of batter, such as pancakes, comprising a continuous, elongated, continuously advanced conveyor belt, means for dispensing individual masses of batter onto the belt to form individual product units adjacent one end of the belt, means for applying sufficient heat to the belt to cook the batter masses dispensed from the dispensing means onto the belt, means for flipping the individual product units as they arrive at an intermediate loca-

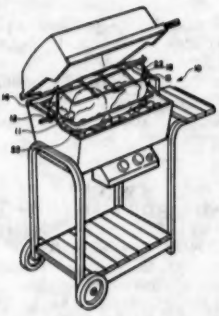
tion along the belt length so that one side of each product unit is cooked on the belt upstream of the means for flipping and another side of each product unit is cooked on the belt downstream of the means for flipping, and means responsive to the continuous belt advancement for activating the dispensing means and the flipping means in synchronism with each other and longitudinal movement of the belt, the belt having a tendency to change dimensions as it changes temperature during cooking of the units, further including first and second drums over which the belt passes, the first and second drums being respectively located at the first and second ends of the belt, and means responsive to the temperature of the belt for changing the longitudinal separation of axes of the drums to compensate for the dimensional changes of the belt so the belt remains taut on the drum despite temperature changes of the belt.

4,583,452

FOOD HOLDER FOR BARBECUE ROTISSERIE

Eric F. Grosse, 3630 Foxcroft Rd., Charlotte, N.C. 28211

Filed Jul. 13, 1984, Ser. No. 630,869
Int. Cl.[4] A47J *43/18*
U.S. Cl. 99—427 **9 Claims**



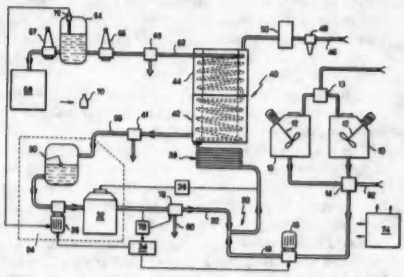
1. A food holder for a barbecue rotisserie, comprising:
(a) a rigid, planar frame defining an unobstructed food encompassing void therein, within which void food may be positioned without being pierced;
(b) first and second coaxial rods fixedly secured to and carried, respectively, by opposite ends of said frame to form a rigid unit, said rods extending outwardly from said frame for mounting the frame for rotation on a barbecue grill, said rods being squire in cross-section;
(c) first and second pairs of outwardly and radially extending spokes fixedly secured to and carried, respectively, by collars having a square bore therein for being mounted opposite concentrically on said coaxial rods of said frame for rotation therewith;
(d) a first food support member having fastening means for being releasably fastened to and carried by one each of said first and second pairs of spokes in food supporting relation to said frame;
(e) a second food support member having fastening means for being releasably fastened to and carried by the other one of said first and second pairs of spokes in food supporting relation to said frame and in opposition to said first support member whereby the food is supported on opposite sides by said first and second support members in predetermined relation to said frame and supported by said frame rigidly and securely in relation to heat as the rotisserie rotates.

4,583,453

PROCESS FOR THE PREPARATION AND HEAT TREATMENT OF FOOD PRODUCTS AND APPARATUS FOR PERFORMING SAID PROCESS

Roland Torterotot, Le Plessis Mornay, 78730 Longvilliers, France

Filed Mar. 12, 1984, Ser. No. 588,524
Claims priority, application France, Mar. 29, 1983, 83 05149
Int. Cl.[4] A23C *3/00*
U.S. Cl. 99—455 **11 Claims**



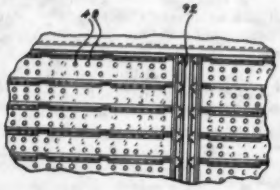
1. An apparatus for performing the process for the continuouis preparation of food products containing preponderant fraction of contituting liquid, at least part of the constituting liquid superheated to a temperature above about 100° C., said apparatus comprises a tubular mixing chamber (20) connected to a metering pump (16) delivering the concentrate withdrawn from at least one storage tank (10), and to a generator (24) of superheated constituting liquid, said tubular mixing chamber (20) adopts the general shape of a T including:
a vertical tubular branch (18) for the arrival of the concentrate in the ascending direction,
an opposite vertical tubular branch (22) for the feeding, in countercurrent, of the superheated constituting liquid, and
a horizontal tubular branch (21) allowing the mixture to circulate, the inlet and outlet of the tubular chamber are equipped respectively with non-return means and back-pressure means.

4,583,454

SIDE AIR FLOW FOOD PROCESSOR

Min-Nan Huang, Madison, and David L. Brethorst, Lodi, both of Wis., assignors to DEC International, Madison, Wis.

Filed Jul. 24, 1984, Ser. No. 634,143
Int. Cl.[4] A23B *4/04*
U.S. Cl. 99—468 **1 Claim**



1. A side air flow processor comprising:
a reception chamber having left and right port means for communicating air to and from said chamber, a left supply-return plenum communicating with said left port means, and a right supply-return plenum communicating with said right port means;
a blower;

a supply air cross-connection plenum having an input duct receiving air unidirectionally from said blower, and having a pair of output ducts each connected by conduit means to a respective one of said left and right supply-return plenums of said chamber;

supply baffle means selectively movable in said supply air cross-connection plenum between first and second positions to selectively direct air from its said input duct to one or the other of its said output ducts for passage to one or the other of said supply-return plenums of said chamber;

a return air cross-connection plenum having an output duct returning air unidirectionally to said blower, and having a pair of input ducts each connected by conduit means to a respective one of said left and right supply-return plenums of said chamber;

return baffle means selectively movable in said return air cross-connection plenum between first and second positions to direct air to its said output duct selectively from one or the other of its said input ducts passing from one or the other of said supply-return plenums of said chamber;

left and right sets of one or more perforated louvers pivotably mounted at respective said left and right port means, each louver being pivotable toward and against its respective said port means to restrict air flow through that port means to only air flowing through the perforations in the louver, each louver also being pivotable away from its respective said port means to provide increased air flow passage area and enable higher volume air flow through that ports means;

said processor having a first mode with:

said supply baffle means in said first position directing air flow from said input duct of said supply air cross-connection plenum to said one output duct of said supply air cross-connection plenum connected by said conduit means to said left supply-return plenum of said chamber, and blocking air flow to said other output duct of said supply air cross-connection plenum connected to said right supply-return plenum of said chamber;

said return baffle means in said second position directing air flow to said output duct of said return air cross-connection plenum from said other input duct of said return air cross-connection plenum connected by said conduit means to said right supply-return plenum of said chamber, and blocking air flow from said one input duct of said return air cross-connection plenum connected to said left supply-return plenum of said chamber;

said left set of louvers pivoted toward and against said left port means;

said right set of louvers pivoted away from said right port means,

such that air flows from said blower through said input duct of said supply air cross-connection plenum through said one output duct of said supply air cross-connection plenum through said left supply-return plenum of said chamber through said perforations in said louvers of said left set then horizontally rightwardly through said chamber to said right port means then through said right supply-return plenum of said chamber through said other input duct of said return air cross-connection plenum through said output duct of said return air cross-connection plenum to said blower;

said supply baffle means in said first position blocking air flow from said right supply-return plenum and said other output duct of said supply air cross-connection plenum;

said return baffle means in said second position blocking air flow to said one input duct of said return air cross-connection plenum and said left supply-return plenum of said chamber;

said processor having a second mode with:

said supply baffle means in said second position directing air flow from said input duct of said supply air cross-connection plenum to said other output duct of said supply air cross-connection plenum connected by said conduit means to said right supply-return plenum of said chamber, and blocking air flow to said one output duct of said supply air cross-connection plenum connected to said left supply-return plenum of said chamber;

said return baffle means in said first position directing air to said output duct of said return air cross-connection plenum from said one input duct of said return air cross-connection plenum connected by said conduit means to said left supply-return plenum of said chamber, and blocking air flow from said other input duct of said return air cross-connection plenum connected to said right supply-return plenum of said chamber;

said right set of louvers pivoted toward and against said right port means;

said left set of louvers pivoted away from said left port means,

such that air flows from said blower through said input duct of said supply air cross-connection plenum through said other output duct of said supply air cross-connection plenum through said right supply-return plenum of said chamber through said perforations in said louvers of said right set then horizontally leftwardly through said chamber to said left port means then through said left supply-return plenum of said chamber through said one input duct of said return air cross-connection plenum through said output duct of said return air cross-connection plenum to said blower;

said supply baffle means in said second position blocking air flow from said left supply-return plenum and said one output duct of said supply air cross-connection plenum;

said return baffle means in said first position blocking air flow to said other input duct of said return air cross-connection plenum and said right supply-return plenum of said chamber.

4,583,455

SCREEN AND ROTOR ASSEMBLY FOR GRAIN HUSKING, DECORTICATING, POLISHING AND WHITENING MACHINES

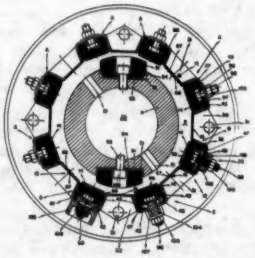
Felipe Salete-Garces, Av. Ano de Juarez 198, Col. Granjas San Antonio, Deleg. Iztapalapa 09070, Mexico

Filed Jun. 27, 1984, Ser. No. 625,282

Claims priority, application Mexico, May 14, 1984, 201341

Int. Cl.[4] B02B *3/00*

U.S. Cl. 99—519 **12 Claims**



1. A screen and rotor assembly for grain husking, decorticating, polishing and whitening machines comprising, in combination, screen holder means formed by an upper rim, a lower rim and a plurality of straight channels having an upper end attached to said upper rim and a lower end attached to said lower rim; each one of said straight channels having a bottom member and a pair of side walls attached to the two side edges of said bottom member and extending radially inwardly of said screen holder means; abrading screen means supported by said screen holder means interiorly thereof and including a plural-

ity of screen members each having a plurality of evenly distributed slots, said screen members being alternated with a corresponding plurality of abrading members, each one of said screen members having side flanges, each flange defining a radially outwardly extending member and an end member perpendicular to said radially outwardly extending member, said flanges being complementarily introduced within said straight channels of said screen holder means wherein said radially outwardly extending members engage interiorly with the side walls of said channels and said end members engage interiorly with at least part of the bottom member of said channels; said abrading members including abrading blocks each having a bottom surface, two side surfaces and a working abrading surface opposite to said bottom surface, said blocks being at least partially introduced within said channels with the bottom surface of said blocks resting against the end members of the flanges of said screen members to fix the position thereof within said channels; a plurality of adjustable fastener means to fix the radial position of said abrading blocks within said channels; and rotor means rotatably arranged concentrically inwardly of said abrading screen means and including a body, two diametrically opposite axially directed grooves on the surface of said body, and abrading inserts positioned within each of said grooves, said abrading inserts provided in the form of abrading blocks having a bottom surface abutting said grooves and an opposite working surface facing said abrading screen means, the working surface of said abrading inserts extending outwardly of said grooves a predetermined distance; and adjustable fasteners in said rotor for fixing the radial position of said abrading inserts within said grooves; the rotation of said rotor means within said abrading screen means producing movement of the grain introduced therebetween and a high intensity abrading action between said abrading members of the abrading screen means and said abrading inserts of the rotor means, the spacing between said abrading members and said abrading inserts being maintained substantially constant by adjustment of said adjustable fasteners.

4,583,456

PRINTING MECHANISM

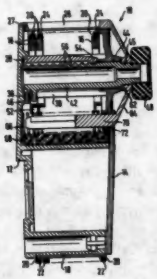
Heinrich Volk, Beerfelden, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Feb. 20, 1985, Ser. No. 703,543

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406776

Int. Cl.⁴ B41J *1/20*

U.S. Cl. 101—111 **5 Claims**



1. Printing mechanism comprising a housing in which a plurality of type carriers are disposed which are in a drive connection with coaxially arranged setting wheels each having a center bore, a setting shaft which is arranged axially displaceably and rotatably in the space formed by the center bores of the setting wheels and axially displaceable into a drive connection with each of the setting wheels, an actuating knob disposed on an end portion of the setting shaft for displacement and rotation of the setting shaft and an display indicating means which is arranged in the housing displaceably parallel to the setting shaft and connected to the one end portion of the setting shaft in such a manner that the latter can rotate relatively thereto but is axially displaceable only jointly therewith, the indicating means being associated with the type carriers in such a manner that its position shows which type carrier in the respective axial position of the setting shaft can be adjusted via the drive connection between the latter and a setting wheel and between the setting wheel and the type carrier, characterized in that the connection between the end portion **(45)** of the setting shaft **(42)** carrying the actuating knob **(48)** and the display indicating means **(26, 27, 29)** is formed by a substantially circular cap **(64)** which has a hub **(62)** mounted on the end portion **(45)** of the setting shaft **(42)** and the display indicating means **(26, 27, 29)** is secured to the edge of the cap.

4,583,457

PRINTER WITH PLURAL ENDLESS BANDS AND SETTING MEANS THEREFORE

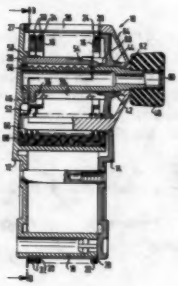
Heinrich Volk, Beerfelden, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Feb. 21, 1985, Ser. No. 703,927

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406822

Int. Cl.⁴ B41J *1/20*

U.S. Cl. 101—111 **5 Claims**



1. Printing mechanism comprising a plurality of setting wheels having radial recesses which are mounted coaxially on a sleeve having an axial slot, and type carries carrying printing types located in a drive connection with said setting wheels, a setting shaft axially displaceably in the sleeve and rotatable therewith and on which is disposed at least one tooth which projects through said slot, axial displacement of the setting shaft bringing said tooth into engagement with said radial recesses in the setting wheels, said recesses being disposed in the hub region of the setting wheels, said slot **(30,32,34)** in the sleeve **(28;29)** being open in the axial direction at one end of the sleeve and closed at the other end of the sleeve, and a spreading means at the end of the sleeve **(28;29)** at which the slot **(30,32,34)** is open which keeps the sleeve internal diameter constant, said spreading means being a separate element from said sleeve and axially overlapping a portion of said sleeve.

4,583,458

MULTI-STATION SILK SCREEN PRINTER FOR PRINTING VARYING INDICIA

Gary T. Beachum, 8228 Savage Guilford Rd., Savage, Md. 20763

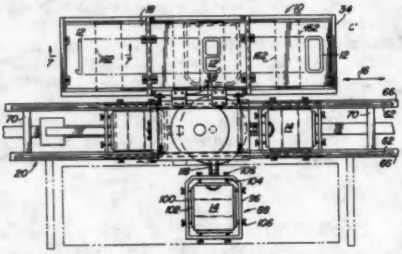
Filed Mar. 22, 1985, Ser. No. 714,969

Int. Cl.⁴ B41F *15/04, 15/10, 15/36*

U.S. Cl. 101—126 **18 Claims**

1. A silk screen printing system for printing indicia on articles, comprising:

(a) a longitudinally extending printing frame;
(b) indicia printing carriage means for applying indicia to said articles, said indicia printing carriage means being coupled to said printing frame and linearly displaceable in said longitudinal direction; and,
(c) at least one printing station means having said articles



mounted thereon, said printing station means being contacted by said indicia carriage means for printing said indicia on said articles, said printing station means being rotatively coupled to said printing system frame about a first vertical axis and a second vertical axis displaced each from the other for independent rotation of said printing station means about said first and second vertical axes.

4,583,459

SHEET-FED PRINTING MACHINE WITH MEANS FOR CUTTING SHEETS LONGITUDINALLY

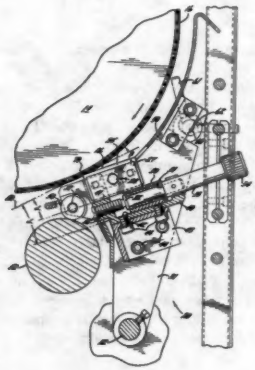
Paul Abendroth, Offenbach am Main; Dietrich Dettinger, Heusenstamm; Roland Höll, Weiterstadt, and Wolfgang Schales, Muhlheim/Main, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed May 18, 1984, Ser. No. 612,042

Claims priority, application Fed. Rep. of Germany, May 18, 1983, 3318068

Int. Cl.[4] B41F *13/58*

U.S. Cl. 101—217 **5 Claims**



1. In a sheet fed printing machine having a plate cylinder, blanket cylinder and impression cylinder as well as means including a feed drum for supporting individual sheets and feeding them one after another to the impression cylinder for printing by the blanket cylinder, a cutting assembly comprising, in combination, a knife blade having a cutting edge, a knife blade support, an arm for mounting said support adjacent the feed drum, the arm being pivoted about an axis parallel to the axis of the feed drum for limited rocking movement toward and away from the feed drum, means including a stop and a clamp for establishing a reference cutting position for the arm said stop acting as an abutment to define said reference position and said clamp serving as a means for locking said arm in said reference position, the feed drum having an anvil extending around its periphery cooperating with the edge of the knife blade for cutting of the sheet, way surfaces between the knife blade support and the amr for guiding the knife blade support for linear movement in the plane perpendicular to the axis of the feed drum and along the path of adjustment which bears an angle of between about 5° to 10° to a line tangent ot the feed drum at the point of cutting when said arm is in said reference cutting position, and means including a manually operated adjusting screw effectively interposed between the arm and the knife blade support for adjusting the knife blade support along its path of adjustment on said way surfaces thereby to vary the degree of engagement of the knife blade with respect to the anvil surface.

4,583,460

PRINTING ROLL WITH DETACHABLE SLEEVES AND KIT THEREFOR

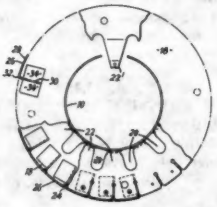
Roger F. Maslin, and John D. Rolfe, both of Bristol, England, assignors to DRG (UK) Limited, Bristol, England

Filed May 4, 1984, Ser. No. 607,031

Claims priority, application United Kingdom, May 5, 1983, 8312384

Int. Cl.[4] B41F *13/10*

U.S. Cl. 101—375 **15 Claims**



1. A printing roll kit comprising:
a roll core;
a plurality of printing sleeves each of said printing sleeves being mountable on said roll core, each of said printing sleeves differing in circumference, and each of said printing sleeves having;
a detachable sleeve adapted for fitting onto a printing roll core, said detachable sleeve including an inner sleeve adapted for radial expansion by a gas, having an inner surface and an outer surface, and an outer cylindrical portion having an inner surface and an outer surface, said outer cylindrical portion radially spaced from said inner sleeve;
an inner portion radially located between said inner sleeve and said outer cylindrical portion, said inner portion being compressible, having a multiplicity of resilient members about said inner sleeve, said resilient members being resiliently deformable by radial expansion of said inner sleeve; and
means for coupling said inner sleeve to said outer cylindrical portion, said coupling means including a multiplicity of discs disposed along the axis of said inner sleeve, each disc having a radially compressible inner portion and a radially relatively incompressible outer portion, substantially incompressible by normal printing forces.

4,583,461

METHOD FOR ATTACKING OF TARGET OBJECTS WITH SMALL BOMBS AND A SMALL BOMB-CARRIER FOR IMPLEMENTING THE METHOD

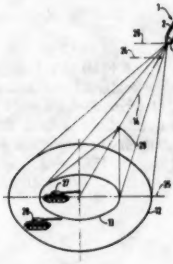
Adolf Weber, Neunkirchen, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,742

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 3319824

Int. Cl.[4] F42B *13/50*; F41G *9/02*; F42C *19/04*

U.S. Cl. 102—489 **7 Claims**



1. In a method for the attacking of target objects through the intermediary of small bombs which are ejected from a carrier in the longitudinal axial direction of said carrier; the improvement comprising delaying ejection of said small bombs from said carrier upon said carrier dropping into a target area until said carrier reaches a lower height relative to a standard height above ground, when before said carrier reaching the standard height, a target object is detected in an area within the target area conforming to a smaller dispersion and target area.

4,583,462

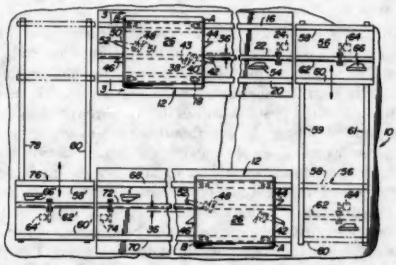
DRIVERLESS VEHICLE FOR TWO WAY ACCUMULATION

Robert A. Hale, Easton, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Jul. 15, 1983, Ser. No. 514,051

Int. Cl.[4] B61J *1/10*; B61B *13/12*

U.S. Cl. 104—48 **5 Claims**



2. A driverless vehicle comprising a body having support wheels for riding on a support surface, first and second drive wheels adapted for frictional contact with a drive tube, each drive wheel being movable between a drive position and a stop position, said drive wheels being connected to the bottom of said body and independent of one another for alternative use depending upon the direction of movement of the vehicle, each drive wheel having a member projecting beyond a different free end of the vehicle body and terminating in a cam follower, the cam followers being at a first elevation on opposite sides of the vehicle center line, a discrete cam projecting from each end of the vehicle, said cams being on opposite sides of said vehicle center line, at each end of the vehicle the cam and cam follower being on opposite sides of said center line at approximately the same elevation with the transverse distance therebetween being substantially the same, and each drive wheel having a housing to which is attached a cam follower at a second elevation, said second elevation being below said first elevation.

3. A system including a vehicle in accordance with claim **2** mounted on a first set of tracks for movement in a first direction using said first drive wheel, a second set of tracks having means for moving said vehicle in an opposite direction while using said second drive wheel, and a shuttle vehicle for transporting said driverless vehicle between said sets of tracks.

4,583,463

DERIVATION DEVICE FOR THE HAUL ROPE OF A ROPEWAY

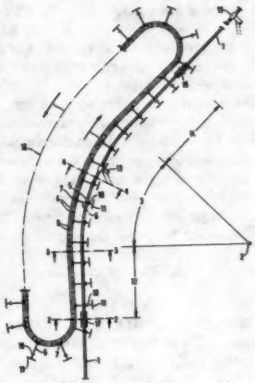
Josef Nejez, Freytaggasse 21/13, A-1210 Wien, Austria

Filed Aug. 9, 1982, Ser. No. 406,674

Claims priority, application Austria, Aug. 21, 1981, 3654/81

Int. Cl.[4] B61B *11/02*, *7/10*

U.S. Cl. 104—189 **10 Claims**



1. A deviation device for the haul rope of a ropeway, in particular a monocable ropeway including spaced load carriers having, each, a rope grip by which they are secured to said rope; a revolving carrier of rope guiding means for laterally deviating said haul rope into a curved path about a given center of curvature, said revolving carrier being on the side of said haul rope remote from the said center of curvature and having a curved part which follows the proposed curvature of said rope and which is situated on that side of the carrier which is adjacent the said haul rope; said rope guiding means comprising a plurality of pivotal levers mounted with their axis on said revolving carrier in a row in the revolving direction, said pivotal levers projecting from said revolving carrier and being pivotable from a normal (first) position to a lifted (second) position, the pivot axis of said levers extending in the revolving direction of said carrier, support members being arranged on the underside of said levers comprising support faces for the haul rope, said support faces being directed toward the pivot axis of said levers, so that, when the haul rope enters said curved part of the revolving carrier of rope guiding means which is in the direction of the center of curvature, the haul rope is laterally towards the center of curvature supported by said pivotal levers in normal position, and, when a rope grip engages a pivotal lever, said lever is displaced upwardly in lifted position.

4,583,464

SUSPENSION ARRANGEMENTS FOR FOUR-WHEELED RAILWAY VEHICLES

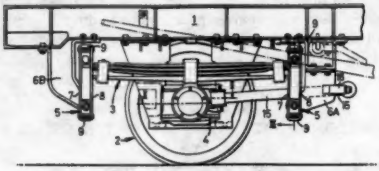
Neil A. Harwood, Derby, England, assignor to British Railways Board, England

Continuation of Ser. No. 377,794, May 13, 1982, abandoned. This application Oct. 19, 1984, Ser. No. 662,797

Claims priority, application United Kingdom, Apr. 1, 1982, 8209609

Int. Cl.[4] B61F *5/02, 5/38*

U.S. Cl. 105—171 4 Claims



1. A suspension arrangement of a four-wheeled railway vehicle having a vehicle body supported on wheelsets through vertical springing, the connection of the body to the wheelsets through the vertical springing including suspension links on which the body is suspended and which have first pivotal mountings at their ends so that they can move laterally to permit lateral movement between the wheelsets and the vehicle body and second pivotal mountings at their ends comprising pivot pins rotating in bores so that the links can move longitudinally, to permit longitudinal movements between the wheelsets and the vehicle body, wherein said bores of the second pivotal mountings are provided with separately formed linings of a friction material providing a predetermined frictional damping to said longitudinal movement, and longitudinally extending traction rods incorporating resilience in their length are connected between the wheelsets and the vehicle body to provide a resilient yaw restraint on the wheelsets.

4,583,465

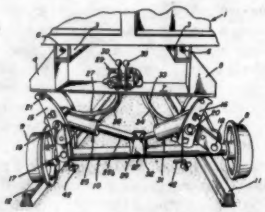
RAILWAY WHEEL APPARATUS FOR A ROAD VEHICLE

Parks L. Powell, Sr., 660 Bankhead Hwy., Mableton, Ga. 30059

Filed Oct. 29, 1984, Ser. No. 665,761

Int. Cl.[4] B61D *15/00;* B61F *13/00*

U.S. Cl. 105—215 C 10 Claims



1. Railway wheel apparatus for a road vehicle having a frame, said apparatus comprising an axle, a pair of flanged wheels mounted in spaced relation on said axle, a first pair of spaced apart toggle structure pivotally connected at one end thereof to said axle, a second pair of spaced apart toggle structures pivotally connected at one end thereof respectively to the other ends of said first pair of toggle structures and pivotally connected at the other ends thereof to said frame to form a pair of toggles interrelating said axle and said frame whereby extension of said first and said second toggle structures effects a downward lowering of said axle and said wheels and retraction of said first and said second toggle structure effects an upward raising of said axle and said wheels, and operating means for extending and retracting said toggles, said operating means being controlled by manually operable control means and arranged simultaneously to extend and to retract said toggles and also being adapted to extend either of said toggles while simultaneously retracting the other toggle.

4,583,466

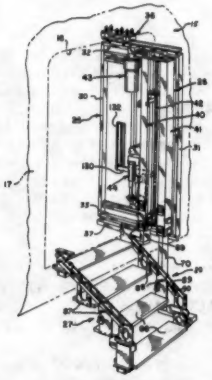
STEP LIFT FOR RAILWAY CARS

Redreddy S. Reddy, Skokie, Ill.; Toussaint Filoni, Laval, Canada; Kenneth S. Fletcher, Dollard des Ormeau, Canada; Gad J. Shaanan, Montreal, Canada, and Anthony J. Walsh, Lachine, Canada, assignors to Vapor Corporation, Chicago, Ill.

Filed Nov. 8, 1982, Ser. No. 440,091

Int. Cl.[4] B61D *23/02*

U.S. Cl. 105—447 12 Claims

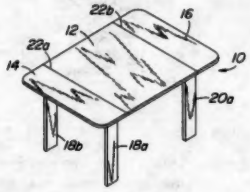


1. Passenger handling apparatus for a railway car to provide at an opening adjustable height platform, stair, or ground-to-car floor platform lift modes, said apparatus including a vertical frame means extending generally perpendicular to the longitudinal axis of the car and a step platform assembly supported by said frame means, means mounting the frame means on the car such that said frame means and assembly is movable between a stored position within the car through the opening to a position outside the car, first drive means for driving the frame means and assembly between the stored position and the position outside the car, said step platform assembly including a plurality of steps selectively movable between platform and stair configurations when the frame means and assembly are in the position outside the car, said steps being interconnected by a parallelogram linkage, means interconnecting the frame means and step platform assembly such that the steps can move between platform and stair configurations, second drive means coacting with the interconnecting means for selectively moving said assembly to provide the desired mode, and said interconnecting means including first and second vertical support bars movably driven by said second drive means and cantilever-ly supporting said step platform assembly, wherein relative movement therebetween will cause the steps to move between the platform and stair configurations and simultaneous movement thereof will cause vertical movement of said step platform assembly.

4,583,467
CONVERTIBLE TABLES

H. Robert Tiffany, Philadelphia, Pa., assignor to Tiffany and Tiffany, Philadelphia, Pa.

Filed Jul. 9, 1982, Ser. No. 396,941
Int. Cl.[4] A47B 3/00
U.S. Cl. 108—19 2 Claims



1. A table convertible between a first position and a second position comprising:

(a) a central planar section substantially rectangular in shape, said central planar section having a lower surface defining a bottom of said table and an upper surface defining a top said table; and

(b) first and second end section hingedly connected to opposite ends of said central planar section, each of said first and second end sections having different widths, the width of said second end section being greater than the width of said first end section, a first pair of legs having upper portions fixedly secured to opposite lateral edges of said first end section, a second pair of legs having upper portions fixedly secured to said second end section, at least said upper portions of said first and second pair of legs having a width substantially equal to the width of said first end section;

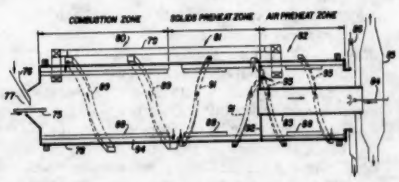
whereby said first and second end sections are pivotable about said hinges to a position in the same plane as said upper surface of said central section to increase the size of said top of said table, said legs supporting said table, thereby defining said first position, and

said first and second end sections are pivotable about said hinges to a position substantially perpendicular to said upper surface of said central section so that said end sections and said legs form sides of said table, at least said upper portions of said first pair of legs abutting said bottom of said central planar section, said first pair of legs resting upon said second pair of legs, thereby defining said second position.

4,583,468
METHOD AND APPARATUS FOR COMBUSTION OF DIVERSE MATERIALS AND HEAT UTILIZATION

Leland M. Reed; William A. Reed, both of Cincinnati, Ohio, and Walter C. Saeman, NE. Cleveland, Tenn., assignors to PEDCo, Inc., Cincinnati, Ohio

Filed Jul. 28, 1983, Ser. No. 518,219
Int. Cl.[4] F23G 5/06
U.S. Cl. 110—246 24 Claims



1. A method for combustion comprising

introducing particulate solids having a combustible component into a rotary elongated combustion chamber for rotation about a substantially horizontal axis having an inlet and an outlet,

introducing an oxidizing gas into said chamber for combustion of said combustible component,

passing a stream of combustion gas through said chamber,

rotating said chamber about its horizontal axis at a speed defined by the following empirical relationship:

$$\text{Revolutions per minute} = A\sqrt{\frac{3}{\text{inside diameter in feet}}}$$

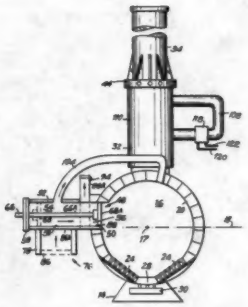
in which A has a value between about 10 and 40, and

lifting and cascading said solids in said chamber through said stream of combustion gas resulting from said speed of rotation thereby achieving a mechanical fluidization of said solids in said combustion gas during combustion.

4,583,469
INCINERATOR

Sabatino DiSabatino, Towaco, N.J., assignor to Sani-Therm, Inc., Nutley, N.J.

Filed Jun. 17, 1985, Ser. No. 745,205
Int. Cl.[4] F23G 5/12
U.S. Cl. 110—346 13 Claims



1. An incinerator system for combustion of waste materials comprising, in combination:

a base,

an elongated casing mounted on said base forming a combustion chamber having an inner surface and having a height and an imaginary horizontal mid plane intersecting said casing at mid height, said casing forming a top outlet and a bottom outlet,

a stack assembly mounted over and in operative connection with said top outlet of said combustion chamber,

said casing forming a side charging entrance having a bottom side disposed no lower than said horizontal mid plane of said primary combustion chamber,

side charging means being coextensive with said charging entrance for loading waste materials into said combustion chamber, wherein said side charging means includes an elongated generally horizontal hopper box forming a hopper chamber adapted to hold waste materials, and having an outlet end and an opposed end wall, said outlet end being coextensive with said charging entrance, said hopper box having a bottom area on a plane generally aligned with said bottom charging entrance, wherein said side charging means further includes an elevator platform positioned below said hopper box, an enclosed housing adapted to movably contain said elevator platform, said platform being movable in said housing between lower and upper positions, wherein in said lower position said

platform is spaced below said mid plane of said combustion chamber and wherein in said upper position said platform is generally aligned with said mid plane and is aligned with said bottom area of said hopper box so as to form the lower wall of said hopper box in a plane generally aligned with said bottom side of said side charging entrance, said enclosed housing forming a charging opening adapted to pass waste materials into said platform when said platform is in said lower position, said housing having a door to said housing adapted to open and close said charging opening; and elevator power means for moving said platform between said lower and upper positions, and

fan and duct means for supplying air to said combustion chamber in opposed air jets proximate said bottom outlet.

4,583,470

ASH DISPOSER FOR SYSTEM TO RECOVER RESOURCES FROM SLUDGE

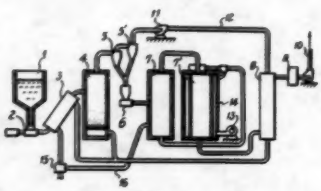
Yasuo Hirose, Yokohama, Japan, assignor to Nippon Furnace Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 415,963, Sep. 8, 1982, Pat. No. 4,507,127. This application Jan. 7, 1985, Ser. No. 689,210

Claims priority, application Japan, Dec. 21, 1981, 56-205251; Dec. 21, 1981, 56-205252; Dec. 21, 1981, 56-205253; Mar. 23, 1982, 57-44553; Mar. 23, 1982, 57-44554; May 25, 1982, 57-87296

Int. Cl.⁴ F23G *5/00, 7/00*

U.S. Cl. 110—346 **8 Claims**



1. Ash disposer for recovering resources from sludge comprising:

a cyclone combustion chamber having a cylindrical inner circumferential wall,

a solid sludge feeder connected to said cyclone combustion chamber, a primary air feed pipe supplying air tangentially along said inner circumferential wall,

a throttled section below said combustion chamber and a water tank just below said throttled section,

a flame tube connected to the side of said apparatus between said combustion chamber and said water tank, and

a second stage combustion chamber downstream of said flame tube.

4,583,471

PLANTING DEVICE

Lasse Turunen, Mänttä , Finland, assignor to G A Serlachius Oy, Mänttä , Finland

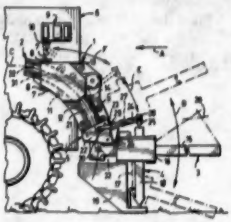
Filed Aug. 28, 1980, Ser. No. 182,316

Claims priority, application Finland, Aug. 29, 1979, 792684

Int. Cl.⁴ A01C *11/00*

U.S. Cl. 111—2 **15 Claims**

1. Apparatus for planting plants comprising: a frame; means for connecting said frame to a traction vehicle; a support arm having a forward end portion adjacent said frame and extending away from said frame in a direction essentially parallel to the direction of movement of the traction vehicle; a ground-engageable planting assembly mounted on said support arm for displacement therealong; and mounting means mounting the forward end portion of said support arm on said frame for



movement in a vertical plane along a forward and upward path from a lowered planting position to a raised position.

4,583,472

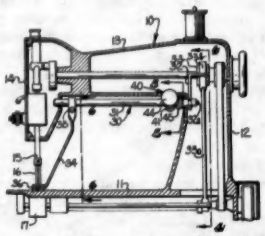
RUFFLER ATTACHMENT FOR SEWING MACHINES

Samuel A. Johnson, 2323 Lake Wheeler Rd., Raleigh, N.C. 27603

Filed Feb. 27, 1985, Ser. No. 706,149

Int. Cl.⁴ D05B *35/08*

U.S. Cl. 112—132 **10 Claims**



1. A sewing machine particularly adapted for forming ruffles, said sewing machine comprising:

a base;

an upstanding standard mounted on said base;

an overhanging arm mounted at one end of said base on the upper end of said standard;

a head carried by the other end of said arm and including a reciprocating needle bar and a presser foot mounted for vertical movement;

feed means carried by said base beneath said presser foot and cooperating therewith to feed the material being sewn;

drive means for said needle bar and feed means; and a ruffling attachment comprising

an auxiliary shaft journaled at opposite ends directly in said standard and directly in said head beneath said overhanging arm for oscillatory movement about a stationary longitudinal axis and being disposed in parallel relation to said arm;

an elongate member mounted at one end thereof on said auxiliary shaft for movement therewith and extending downwardly and outwardly therefrom to its other end disposed in front of said presser foot;

a ruffling blade carried by said other end of said elongate member and extending rearwardly therefrom toward said presser foot and being adapted to engage the material being sewn and to push the material toward the presser foot upon oscillatory movement of said auxiliary shaft and elongate member in one direction and to form ruffles therein, and to retract forwardly upon oscillatory movement of said auxiliary shaft and elongate member in the other direction; and

follower means connecting said auxiliary shaft to a cam means on said drive means for oscillating said auxiliary shaft in timed relation to reciprocation of said needle bar.

4,583,473

PATTERN CAM SELECTING DEVICE OF A SEWING MACHINE

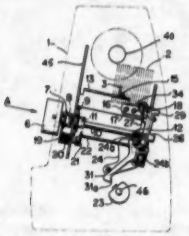
Yoshikazu Ebata, Tokyo, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Nov. 21, 1984, Ser. No. 674,020

Claims priority, application Japan, Nov. 25, 1983, 58-180921[U]

Int. Cl.⁴ D05B *3/02*

U.S. Cl. 112—465 **7 Claims**



1. A pattern cam selecting device of a sewing machine having needle penetrating a fabric to be sewn to form stitches thereon, stacked pattern cams rotated upon the rotation of the main drive shaft, a cam follower normally spring-biased toward the pattern cams to engage a selected one of the pattern cams, the cam follower being operated to move along the stacked pattern cams to select a desired pattern cam, the pattern cam selecting device comprising;

(a) swingable means (13) swingable between a first position in which said cam follower is released to engage one of said stacked pattern cams and a second position in which said cam follower is disengaged from said pattern cam;

(b) manually operated means for swinging said swingable means;

(c) locking means (26) operated to lock said swingable means in said second position;

(d) cam means (23) rotated by and upon the rotation of said main drive shaft and having a predetermined cam range of a larger diameter and a predetermined cam range of a smaller diameter;

(e) actuating means (29, 31) including a lever (29) turnable about an intermediate shaft and having a follower element (31) provided at one end of said lever, said lever being normally spring-biased in one direction such that said follower element may come into a rotation path of said cam means (23), said follower element being held out of the rotation path of said cam means by said locking means (26) when said swingable means is in said first position;

(f) clutch means (34) operatively connected with said actuating means and operated to move between an inoperative position and an operative position in which said clutch means is ready to unlock said locking means from said swingable means; and

(g) clutch holding means (27) for holding said clutch means in said inoperative position to allow said locking means to move to lock said swingable means in said second position, wherein said lever is released and said follower element comes into the rotation path of said cam means when said smaller diameter cam range of said cam means comes opposite to said follower element while said clutch means is moved from said inoperative position to said operative position, said clutch means being moved from said operative position to said inoperative position to cause said locking means to unlock said swingable means when said follower element engages said larger diameter cam range of said cam means during a subsequent rotation of the latter.

4,583,474

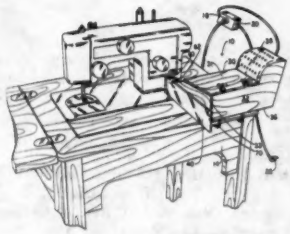
AUXILLARY CONTROL APPARATUS FOR SEWING MACHINES

Charles A. Tysinger, Rte. 9, Box 567, Asheboro, N.C. 27330

Filed Apr. 2, 1985, Ser. No. 719,213

Int. Cl.⁴ D05B *69/06*

U.S. Cl. 112—217.3 **3 Claims**



1. A portable auxillary control apparatus for selectively adapting a conventional cabinet-type, electric-motor-powered sewing machine for use by handicapped persons wherein said sewing machine includes a standard knee or foot-operated or other type of standard control; said control apparatus comprising:

(a) a housing having means for being removably mounted on a selected surface area of said cabinet;

(b) a variable means mounted in said housing for controlling the start-up, speed, and stopping of said electric motor;

(c) a control arm hingedly mounted on the exterior of said housing and to which pressure is applied for activating said variable means;

(d) plunger means passing through said housing and operatively connecting said control arm and said variable means for transmitting pressure from said control arm to said variable means:

(e) electrical outlet means for receiving the electrical plug from said knee or foot operated control, thereby selectively connecting said auxillary control to said sewing machine motor such as to bypass said standard knee or foot operated control;

whereby application of pressure to said control arm is transmitted to said variable motor-control means and thus to said machine motor.

4,583,475

PRESSER FOOT FOR ZIGZAG SEWING MACHINES

Susumu Hanyu, Hachioji, and Akio Koide, Kokubunji, both of Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Nov. 10, 1983, Ser. No. 550,696

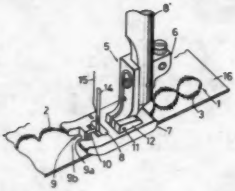
Claims priority, application Japan, Nov. 16, 1982, 57-172326[U]

Int. Cl.⁴ D05B *29/00, 3/02*

U.S. Cl. 112—235 **2 Claims**

1. A presser foot to be used in combination with a zigzag sewing machine for producing a combination stitch, including a needle dropping hole (8) formed therein adapted to allow lateral swinging movement of a reciprocating needle between two needle dropping points, a recess (9) provided in a bottom work-facing surface (7*b*) and extending along one entire side thereof, said recess being defined by a face (9*b*) positioned higher than the remainder of the bottom surface (7*b*) of the presser foot with a predetermined vertical distance therebe-

tween and by a side wall (9*a*) connecting the inner end of said face (9*b*) and the remainder of the bottom face (7*b*) and extending laterally of one of the needle dropping points of said later-



ally swinging needle within said needle dropping hole (8) wherein said work-facing surface includes both needle dropping points.

4,583,476

SEWING MACHINE HAVING IMPROVED CORNER STITCH ACCURACY

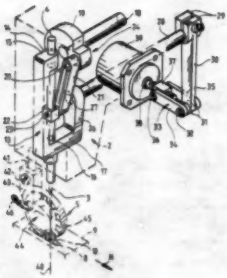
Jochen Fischer, Detmold, Fed. Rep. of Germany, assignor to Kochs Adler AG, Fed. Rep. of Germany

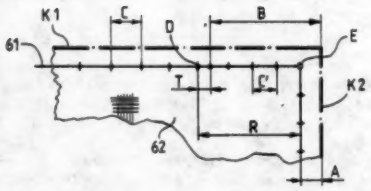
Filed Dec. 27, 1984, Ser. No. 686,972

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1984, 3402224

Int. Cl.[4] **D05B** *69/22, 69/20, 19/00*

U.S. Cl. 112—275 **8 Claims**





1. A sewing machine, particularly an industrial sewing machine, comprising a needle which is arranged to be driven up and down by means of a needle bar, a feed dog for forward transfer of a workpiece in coordination with needle movement, an actual feed rate sensing device arranged to supply an electric signal corresponding to the feed rate of said workpiece, at least one sensor for detecting a workpiece edge and a device for displacing the longitudinal axis of said needle parallel to the sewing direction as a function of the actual feed rate sensing device and the detection of a workpiece edge by said at least one sensor.

4,583,477

OVERHAND SEWING MACHINE WITH CLUTCH-ACTUATED CONVEYING DISK DRIVE

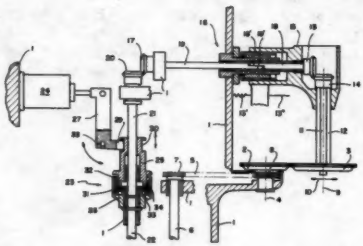
Hans Wagner, Munich, Fed. Rep. of Germany, assignor to J. Strobel & Sohne GmbH & Co., Fed. Rep. of Germany

Filed Oct. 17, 1984, Ser. No. 661,798

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337876

Int. Cl.[4] **D05B** *27/14*

U.S. Cl. 112—322 **10 Claims**



1. Overhand sewing machine for the sewing of innersoles to the shank of shoes with two driven conveying disks (3 and 2) in contact with the material of the innersole and the shank, respectively, with each disk being intermittently rotated by a corresponding driving means (22 and 6), comprising a clutch (23) for disconnecting one of the conveying disks (3) from its corresponding driving means (22) while the other conveying disk continues to be intermittently rotated.

4,583,478

DEVICE FOR GATHERING AND RETAINING A PORTION OF A FABRIC

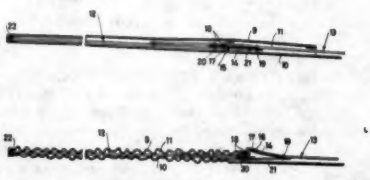
Piero Bassetti, Milan, Italy, assignor to Bassetti, S.p.A., Milan, Italy

Filed Mar. 2, 1984, Ser. No. 585,449

Claims priority, application Italy, Mar. 14, 1983, 21104/83[U]

Int. Cl.[4] **A41D** *1/00;* **B32B** *7/08*

U.S. Cl. 112—413 **16 Claims**



1. A device for gathering and retaining a portion of a fabric article comprising:

a first elongated element connected at one end to the fabric article and slidable within a seating provided on the fabric article, said seating having an opening therein;

a second elongated element slidable within said seating and protruding freely from said seating through said opening, said second element being connected to said first element at at least two points such that said first and second elements overlap between said connection points, the overlapping portion of said second element being longer than the overlapping portion of said first element; and

a rigid lamina connected to said overlapping portion of said second element, said rigid lamina being able to assume a first position adjacent to said overlapping portion of said

element when said seating is in an ungathered configuration and a second position engaging said seating opening when said seating is in a gathered configuration.

4,583,479

LINKED VEHICLE

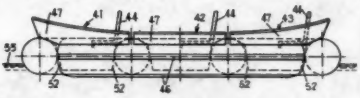
Rainer Lehmann, Singhofen, Fed. Rep. of Germany, assignor to APEC Freizeitanlagen GmbH, Frankfurt, Fed. Rep. of Germany

Filed Nov. 16, 1983, Ser. No. 552,452

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242401; Oct. 7, 1983, 3336563

Int. Cl.[4] B63B *7/08*

U.S. Cl. 114—345 **2 Claims**



1. A linked vehicle, comprising a plurality of longitudinally spaced units which are substantially rigid and are connected by bend links which permit limited movement of the units relative to one another, each said unit including a substantially rigid frame part which has an upwardly open region, said frame parts of adjacent said untis being connected at their longitudinally adjacent ends by said bend links and said bend links being elastically deformable intermediate members, and each said unit further including a rigid basket which is removably disposed in said upwardly open region of and is supported by the associated frame part, wherein said intermediate members each include an inflatable chamber, and wherein the gas pressure in each said chamber is selected so that said intermediate members are softer than and can be deformed substantially easier than said substantially rigid frame parts.

4,583,480

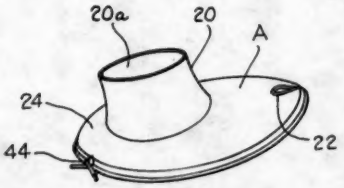
KAYAK COCKPIT COVER

Don A. Hamilton, 108 Buena Vista Dr., and William E. Masters, 313 Dogwood La., both of Easley, S.C. 29640

Filed Feb. 6, 1984, Ser. No. 577,054

Int. Cl.[4] B63B *19/00*

U.S. Cl. 114—347 **12 Claims**



1. A spray skirt for covering the cockpit seat opening, said cockpit opening being of the type of a kayak and the like having a raised rim around the perimeter of the opening with an outwardly extending lip overhanging the hull of said kayak, said spray skirt comprising:

a spray skirt fabric cover for spanning the cockpit opening and preventing the entry of water into said opening;

a fitted opening formed in said cover for fitting around the waist of a boater;

an inner elastic band carried about an interior surface of a perimeter of said fabric cover;

a bulbous elastic retaining element carried by said perimeter of said spray skirt cover adjoining said elastic band;

said elastic band and bulbous elastic retaining element being stretchable to facilitate placement over said rim of said cockpit and elastic retention underneath said lip of said rim;

said bulbous retaining element being compressible and having a rounded cross-section facilitating rolling of said entire retaining element over the lip of said rim to remove said spray skirt quickly upon initial pulling of said retaining element over said lip;

said elastic band having a sufficient inward extent toward said fitted opening for engaging an underneath surface of said lip of said cockpit rim to prevent abrading of said fabric cover against said rim when said spray skirt cover is attached to said opening; and

said inner elastic band and said elastic bulbous retaining element are one piece, and including an outer elastic band secured to an exterior surface of said spray skirt which is one-piece with said inner elastic band and bulbous retaining element.

4,583,481

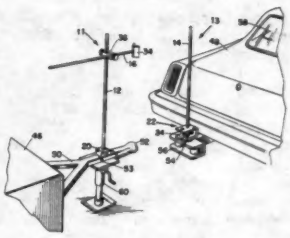
METHOD AND APPARATUS FOR HITCHING A TRAILER TO A MOTOR VEHICLE

Roy Garrison, 201 Academy St., Canton, N.C. 28716

Filed Oct. 15, 1984, Ser. No. 660,736

Int. Cl.[4] B60Q *11/00*

U.S. Cl. 116—28 R **10 Claims**



1. An apparatus for enabling a trailer, having a hitching tongue, to easily be hitched to a motor vehicle, having a trailer hitch with a ball mounted thereto, comprising:

first, second and third rods;

means for mounting said first rod onto the hitching tongue of the trailer;

a bracket, having said second rod attached thereto, said bracket for mounting said second rod onto the motor vehicle near the ball of the trailer hitch;

said bracket including a clip portion directly coupled to the ball of the trailer hitch, and a rod receiving portion pivotally mounted on said clip portion by a hinge;

means for mounting said third rod on either said first or said second rod; said third rod projecting away from said rod on which said third rod is mounted;

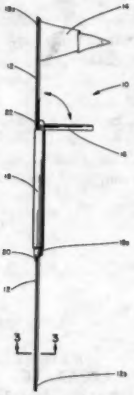
guide means connected to said third rod, said guide means adapted to come into contact with said rod which does not have third rod mounted thereto for insuring that the hitching tongue of the trailer is properly positioned near the ball of the trailer hitch for easily hitching the trailer to the motor vehicle a spring connected between said clip portion and said rod receiving portion for urging said rod receiving portion toward engagement with said ball and thereby permitting ease of mounting and removal of said bracket.

4,583,482

SIGNAL INDICATOR

Faye M. Smith, Eagle Rock, N.C. 27523

Filed Jan. 24, 1985, Ser. No. 694,503
Int. Cl.[4] G09F *17/00*
U.S. Cl. 116—209 **5 Claims**



1. A portable lightweight ground insert signal indicator for use by hunters, outdoorsmen and other individuals to indicate an area where such individuals can be found, said portable lightweight ground insert signal indicator comprising:

an elongated generally U-shaped stake having an upper end portion and a pointed lower ground insert portion;

a flag secured to the upper end portion of said generally U-shaped stake;

a stop secured to said generally U-shaped stake intermediately between said upper portion and said lower ground insert portion;

a direction indicator secured to said stake intermediately between said stop and the upper end portion of said stake;

means for pivotably mounted said direction indicator for movement between an inoperative position where said direction indicator extends adjacent and along side said stake to an indicating position where said indicator projects outwardly from said stake and points in a direction in which individuals can be found;

an elongated sleeve movably mounted for axial movement on said stake between said stop and the upper end portion of said stake; and

said sleeve being movably mounted for movement from a closed inoperative position about the upper end portion of said stake where said sleeve covers and encases said flag and said direction indicator to an open portion where said sleeve abuts said stop and where said flag and direction indicator are exposed.

4,583,483

MECHANICAL METER TAMPERING INDICATOR

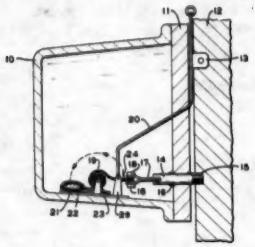
Roger A. Rausch, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 429,353, Sep. 30, 1982, abandoned. This application Oct. 28, 1985, Ser. No. 793,450
Int. Cl.[4] G08B *13/14*
U.S. Cl. 116—204 **10 Claims**

1. An apparatus for indicating meter tampering in a watthour meter having a base member, a metering mechanism fixed on a mechanism support member which plugs into the base member and a transparent cover fixed to the mechanism support member said apparatus comprising:

retaining pin means fixed to said base member through said mechanism support member, said retaining pin means further comprising resiliently retained rectractable detent pin members disposed to allow said mechanism support member to slip over said retaining pin means and thereafter fixing said mechanism support member to said base;

a pair of linear, parallel, spaced springs mounted in and supported by said retaining pin, said springs being free to rotate about an axis parallel thereto;



main spring means including tyne means mounted on said cover and adapted to be retained between said pair of springs such that displacement of said main spring means relative to said pair of springs releases said main spring means;

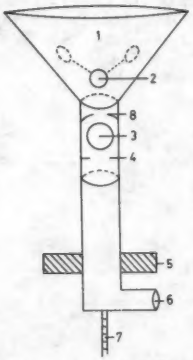
readily rupturable container means mounted on said cover and disposed so as to be struck by said tyne means upon release of said main spring means.

4,583,484

PRESSURE-CHANGE INDICATOR

Erwin Freund, 54 Dawson Ave., Clifton, N.J. 07011

Filed Jul. 27, 1983, Ser. No. 517,577
Int. Cl.[4] G01L *23/00*
U.S. Cl. 116—268 **3 Claims**



1. A pressure change indicator useful in assisting divers during ascents said indicator being constructed of a transparent material and comprising in combination a hollow, cylindrical chamber means having a first end and a second end, air inlet means operatively connected to the said first end of said chamber means, air reservoir means operatively connected to said second end of said chamber means, said reservoir means having an air outlet means, said reservoir means receiving air blown by the diver into said air inlet means until substantially all water is forced out of the reservoir means through the outlet means and said reservoir means is substantially filled with air, said cylindrical chamber means being further charac-

terized in containing a free moving ball indicator means so constructed as to be too large to pass out of said chamber means at either of said ends but still allowing air to pass through said chamber means into said reservoir means, and said chamber means having an indicator line around its circumference at a point proximate to said second end whereby if too rapid an ascent rate is achieved air expanding in said air reservoir means cannnot pass out of said outlet means quickly enough and will thereby push said ball indicator means below said indicator line against the force of the water filling said cylindrical chamber means.

4,583,485

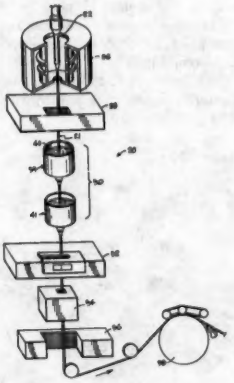
APPARATUS FOR COATING A LIGHTGUIDE FIBER

James V. Smith, Jr., Decatur, Ga., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Division of Ser. No. 509,683, Jun. 30, 1983. This application Jan. 29, 1985, Ser. No. 696,234

Int. Cl.⁴ B05C *3/15*

U.S. Cl. 118—68 **13 Claims**



1. An apparatus for uniformly coating a lightguide fiber, said apparatus including:

means for providing a lightguide fiber which has a relatively high temperature;

means for moving the fiber along a path of travel;

coating means disposed along the path of travel for applying a liquid coating material to the lightguide fiber; and

cooling means interposed between said means for providing a fiber and said coating means for reducing substantially the temperature of the lightguide fiber, said cooling means comprising;

a housing having a depending portion, said depending portion including a die and a passageway which terminates in said die;

an inner vessel which is mounted in said housing and which includes an upper portion and a lower portion which terminates in an orifice of a die and which extends into said passageway of said depending portion of said housing, said inner vessel including an elongated passageway which extends from said die of said inner vessel to a cavity formed in said upper portion, and said inner vessel cooperating with said housing to form a chamber which is capable of being filled with a cooling medium;

means for supplying a cooling medium to said chamber; and

means for providing to said cavity of said inner vessel a liquid material which is the same as the coating material that is applied by said coating means and which has a temperature that does not exceed a predetermined value.

4,583,486

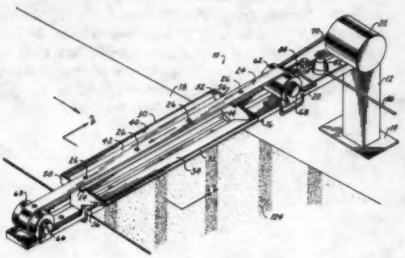
APPARATUS FOR DEPOSITING GRANULES ON A MOVING SHEET

John A. Miller, Clearwater, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Filed Jan. 31, 1985, Ser. No. 696,813

Int. Cl.⁴ B05C *5/02*

U.S. Cl. 118—308 **7 Claims**



1. An apparatus for depositing granules on a moving sheet which sheet moves in a predetermined direction in a plane below said apparatus comprising: a hopper spaced a predetermined distance above said sheet adapted to receive granules, said hopper having at least two downwardly, inwardly sloping sides separated by an open area, a perforated belt adapted to close said open area and means to drive said belt in a predetermined non-reciprocal direction only, whereby granules received by said hopper drop through said perforations in said belt and are deposited on said moving sheet.

4,583,487

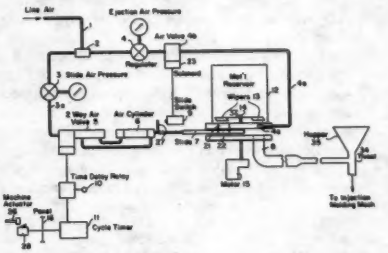
METHOD AND APPARATUS FOR CYCLICALLY DISPENSING LUBRICANTS AND COLORINGS FOR USE IN INJECTION MOLDING MACHINES

Horace G. Wood, 31 Leedale Rd., Webster, N.Y. 14580

Continuation of Ser. No. 528,823, Sep. 2, 1983, abandoned. This application Oct. 19, 1984, Ser. No. 662,650

Int. Cl.⁴ B05B *1/00*

U.S. Cl. 118—308 **15 Claims**



1. Apparatus for dispensing and dispersing dry lubricants or coloring powder into thermoplastic material prior to injection molding thereof for adding as by coating the material with the powder while the material is in a hopper of a machine in which an injection molding is carried out in cycles, said apparatus comprising: a reservoir for containing said powder, and having an outlet opening; slide means actuable for removing a dispensed amount of said powder from said reservoir outlet open-

ing and depositing said dispensed powder at the confluence of an air port and delivery tube; said tube communicating with the throat region of said hopper wherein a volume of said material is retained between said cycles; means for coordinating the actuation of said slide means and the application of air to said air port to transport said dispensed amount of powder and to disperse said powder uniformly throughout said volume of said material.

4,583,488

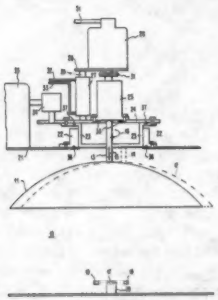
VARIABLE AXIS ROTARY DRIVE VACUUM DEPOSITION SYSTEM

William W. Brown, Jr., Milton; Wayne J. Curry, Montgomery, both of N.Y.; Gerhard P. Dahlke, Buxtehude, Fed. Rep. of Germany; Francis T. Lupul, LaGrangeville, and Paul A. Totta, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,964

Int. Cl.[4] B05C *13/00*

U.S. Cl. 118—500 **19 Claims**



1. Apparatus for moving a workpiece in a vacuum environment, comprising:

a vacuum chamber;

a workpiece holder suspended within the interior of said vacuum chamber for holding said workpiece;

an elongated member connected at one end thereof to said workpiece holder and extending eccentrically with respect to the central longitudinal axis of said vacuum chamber through an opening in said vacuum chamber;

first driving means external to said vacuum chamber and sealably coupled to said elongated member for eccentrically driving said workpiece holder within said vacuum chamber; and

second driving means external to said vacuum chamber and connected to the other end of said elongated member for rotatively and linearly driving said workpiece holder within said vacuum chamber, said second driving means being sealably mounted on said first driving means,

whereby said workpiece is moved eccentrically, linearly, and rotatively within said vacuum chamber without the generation of seal particles within said vacuum chamber.

4,583,489

METHOD FOR MAKING DUPLICATE XERORADIOGRAPHIC IMAGES

Thomas L. Thourson, La Canada, and David J. Wolfe, Pomona, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1985, Ser. No. 731,182

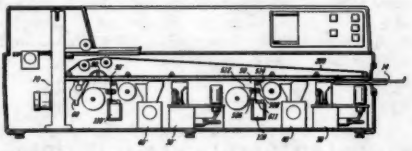
Int. Cl.[4] G03G *15/08, 15/16*

U.S. Cl. 118—653 **6 Claims**

1. A xerographic system which uses toner to produce a plurality of images from a single exposure of a xerographic plate comprising,

a development station for applying toner to create an image thereon,

a transfer station for transferring said image from said plate onto a surface, and



means for transporting the plate a plurality of times over said development and transfer stations to create a plurality of images.

4,583,490

THIN DEVELOPER LAYER FORMING APPARATUS

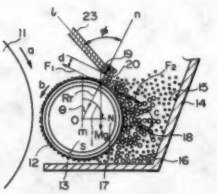
Fumitaka Kan, Yokohama; Hatsuo Tajima, Matsudo; Atsushi Hosoi, Tokyo; Masanori Takenouchi, Urawa, and Takashi Saito, Ichikawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1984, Ser. No. 638,786

Claims priority, application Japan, Aug. 18, 1983, 58-151028; Oct. 31, 1983, 58-205187

Int. Cl.[4] G03G *15/09*

U.S. Cl. 118—658 **19 Claims**



1. A thin developer layer forming apparatus, comprising:

a developer supply container, having an opening, for containing a developer and magnetic particles;

an endlessly movable developer carrying member for carrying the developer and which is movable between the inside of said developer supply container and the outside of said developer supply container through the opening;

a magnetic-particle confining member of magnetic material and spaced from an outer surface of said developer carrying member to define a gap therebetween; and

means for generating a fixed magnetic field, having magnetic pole means disposed inside of said carrying member and upstream of said confining member with respect to the movement direction of said developer carrying member;

wherein said confining member is inclined toward downstream with respect to the movement direction of said developer carrying member to confine the magnetic particles within said developer supply container and apply only the developer on said developer carrying member.

4,583,491

TONER CONCENTRATION DETECTING APPARATUS

Mitsuo Suzuki, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1984, Ser. No. 635,151

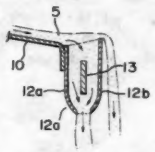
Claims priority, application Japan, Aug. 12, 1983, 58-146413

Int. Cl.[4] B05C *11/00*

U.S. Cl. 118—689 **14 Claims**

1. A toner concentration detecting apparatus for use in a developing apparatus comprising a developer container con-

taining a developer including a carrier and a toner, means for transporting said developer contained in said developer container toward and onto the surface of a recording medium having an electrostatic latent image thereon, means for guiding a portion of said developer toward and into a detector container, and means for measuring the mixture ratio of the carrier and the toner in said developer introduced into said detector container, wherein the inner surfaces of two opposing side walls of said detector container are so configured that they are formed of curved surfaces of large radii of curvature having their centers on the same side of said detector container and the



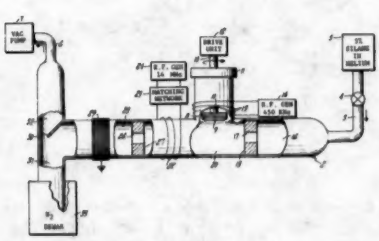
passage defined between said side wall surfaces is continuously gradually narrowed toward the outlet of said detector container, and a toner concentration detecting element is disposed along substantially the flowing direction of said developer flowing downward in said detector container, the passage defined between the side wall surfaces being continuously gradually narrowed along the detecting element and downstream of the detecting element toward said outlet, said passage being sufficiently continuously gradually narrowed toward the outlet of said detector container such that the developer flows downward in substantially the same direction in said detector container.

4,583,492

HIGH RATE, LOW TEMPERATURE SILICON DEPOSITION SYSTEM

Melvyn E. Cowher, East Brookfield, Mass., and Alexander J. Shuskus, West Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1983, Ser. No. 562,625
Int. Cl.[4] C23C *16/50*
U.S. Cl. 118—723 **1 Claim**



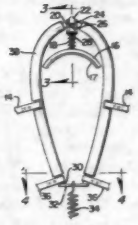
1. A RF plasma-enhanced vapor deposition reactor for depositing silicon comprising:
   - a reaction tube having an inlet and an outlet;
   - means for providing a flow of gaseous silane solution into said reaction tube at said inlet and for exhausting gases from said reaction tube at said outlet;
   - a pair of flow-reducing inserts spaced apart along said reaction tube, to define a deposition chamber;
   - mounting means for disposing a substrate upon which silicon is to be deposited within said deposition;
   - a RF induction coil disposed about said reaction tube entirely downstream of said mounting means; and
   - a gravity trap chamber disposed between said deposition chamber and said outlet and a baffle disposed in the reaction tube at said gravity trap chamber so as to divert said flow first toward said gravity trap chamber and then to said outlet.

4,583,493

ANIMAL TRAINING DEVICE

James D. Terry, 3248 S. St. Paul St., Wichita, Kans. 67217

Filed Dec. 12, 1984, Ser. No. 681,122
Int. Cl.[4] B68B *1/00*
U.S. Cl. 119—130 **9 Claims**



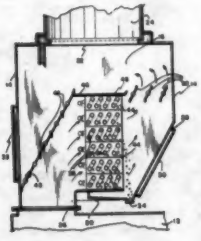
4. In an animal training device having a harness assembly for securing said device to the head of an animal and a bosal member attached to said harness assembly having an upper portion disposed in spaced surrounding relation to the snout of the animal, the improvement comprising:
   - an arcuate bridge member interposed between said bosal member and the snout of the animal, said bridge member traversing only the upper portion of said bosal member, support means including at least one spring-loaded guide rod affixed to said bridge member and extending upwardly from said bridge member for mounting said bridge member in spaced relation to said bosal member with said bridge member disposed beneath said upper portion of said bosal member and resting against the snout of the animal, and means secured to said bosal member for applying a downwardly directed force to said bosal member causing said bosal member to be compressed downwardly toward said bridge member against the urging of said spring-loaded guide rod whereby said bridge member will exert pressure against the snout of the animal.

4,583,494

HEAT RECOVERY APPARATUS AND HEAT RECOVERY METHOD

Merrill K. Gordon, Jr., P.O. Box 534, Winfield, Kans. 67156

Filed Feb. 21, 1985, Ser. No. 703,994
Int. Cl.[4] F22B *33/00*
U.S. Cl. 122—20 B **24 Claims**



1. A heat recovery apparatus for boilers, or the like, comprising

a heat recovery housing generally having a pair of side walls, a pair of end walls connected to said side walls, a top and a bottom;

a combustion gas inlet disposed within said bottom;

a combustion gas outlet positioned within said top;

a plurality of interconnected water conduit tubes provided with a cold water inlet in communication with one of said end wals and a hot water exit in communication with one of said end walls and circuitously passing through said heat recovery housing;

a tube roof interconnected between said pair of end walls above said water conduit tubes and above said cold water inlet and above said hot water exit;

a plurality of by-pass dampers pivotally connected between said pair of end walls such that when said by-pass dampers are in a closed position the closed by-pass dampers define a generally flat by-pass structure angularly disposed with respect to a horizontal plane and extending between said pair of end walls and extending from one of said pair of side walls up to said tube roof in order to divert or change the direction of flow of combustion gases frem the combustion gas inlet toward the water conduit tubes;

a condensate drain positioned in said bottom of said heat recovery housing and underneath said water conduit tubes;

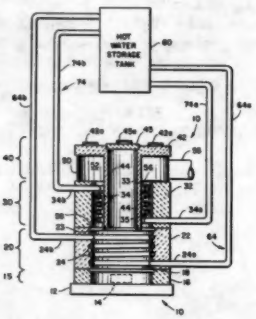
a plurality of exit dampers pivotally connected between said pair of end walls such that when said exit dampers are in a closed position the closed exit dampers define a generally horizontal flat exit structure extending between said pair of end walls and from the tube roof to the opposed other wall of said pair of side walls from which said bypass dampers extend from in order to be pivotally opened to allow the flow of combustion gases from the water conduit tubes to the combustion gas outlet.

4,583,495

WOOD FIRED QUICK RECOVERY WATER HEATER

Richard C. Hill, Orono; Richard Kasper, Lucerne; David J. Radley, Orono, and Arthur R. Pete, Costigan, all of Me., assignors to Board of Trustees of the University of Maine, Bangor, Me.

Filed Dec. 6, 1984, Ser. No. 679,068
Int. Cl.[4] F22B *21/00*
U.S. Cl. 122—251 **18 Claims**



1. A wood-type solid fuel fired water heater comprising:

a radiation heat transfer section comprising a first annular side wall of insulating refractory material and a water circulating first coil positioned in adjacent contact with the inner surface of the first annular side wall, said first annular side wall defining the combustion chamber and locus of combustion of the water heater for direct radiant heating of water in the first coil, said first coil formed with a first cold line inlet and a first hot line outlet for circulation of water through the first coil;

a convection heat transfer section comprising a second annular side wall of insulating refractory material positioned above the first annular side wall and a water circulating second coil mounted inside the second annular side wall spaced from the inner surface of the second annular side wall for circulation of hot flue gas around the second coil for convection heating of water in the second coil, said second coil formed with a second cold line inlet and a second hot line outlet for circulation of water through the second coil;

a head section positioned over the convection heat transfer section, said head section enclosing the top of the heater and defining a draft plenum over the convection heat transfer section, said head section comprising a stack outlet and a central fuel chute for receiving solid fuel and delivering solid fuel to the combustion chamber in the radiation heat transfer section, said fuel chute defining the inner wall of an annular passageway through the convection heat transfer section, said inner wall spaced from the second coil for circulation of hot flue gas around the second coil;

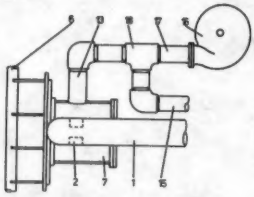
and a hot water storage tank, the respective first and second hot line outlets from the first and second coils being coupled separately and in parallel to the top portion of the hot water storage tank, said first and second cold line inlets to the first and second coils being coupled separately and in parallel to the bottom portion of the hot water storage tank for convection circulation of heated water in parallel through the first and second coils.

4,583,496

SOOT BLOWER

Karl Albers, Anholt, and Hans Schwade, Voerde, both of Fed. Rep. of Germany, assignors to Bergemann GmbH, Wesel, Fed. Rep. of Germany

Filed Apr. 19, 1985, Ser. No. 725,235
Int. Cl.[4] F22B *37/52*
U.S. Cl. 122—379 **10 Claims**

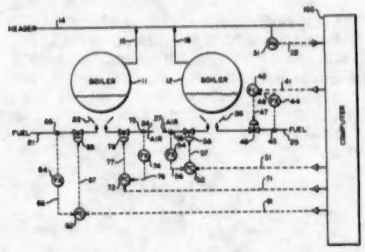


1. A soot blower for cleaning heating surfaces of a heat exchanger comprising: a lance having at its front end jets, said lance having a rear end connected through a soot blower valve to a feed line for a blowing medium, said lance passing through a wall of the heat exchanger and being sealed by a wall casing where the lance passes into the heat exchanger; a first connector for a purging medium for said lance between the soot blower valve and the jets of said lance; a second connector for a sealing medium on said wall casing; a system for generating and distributing purging medium and sealing medium for said soot blower connected to said respective connectors; and check valve means between the soot blower and said purging medium connector for preventing flow of blowing medium into said generating and distributing system, each soot blower having a separate blower for generating and distributing purging medium and sealing medium.

4,583,497
BOILER CONTROL

Merle R. Likins, Jr., and Ronald J. LaSpisa, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 14, 1984, Ser. No. 589,445
Int. Cl.[4] F22B 9/00
U.S. Cl. 122—448 B 4 Claims

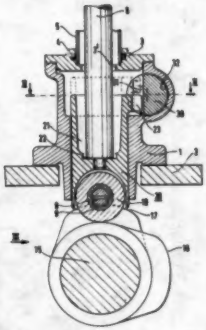


1. Apparatus comprising:
a first boiler having a first burner associated therewith;
means for supplying a first fuel stream to said first burner;
means for supplying a first air stream to said first burner, wherein the combustion of said first fuel stream with said first air stream at said first burner supplies heat to said first boiler;
a header conduit;
means for supplying steam from said first boiler to said header conduit;
a second boiler having a second burner associated therewith;
means for supplying a second fuel stream to said second burner;
means for supplying a second air stream to said second burner, wherein the combustion of said second fuel stream with said second air stream at said second burner supplies heat to said second boiler;
means for supplying steam from said second boiler to said header conduit;
means for establishing a first signal representative of the pressure in said header conduit;
means for establishing a second signal representative of the desired pressure in said header conduit;
means for comparing said first signal and said second signal and for establishing a third signal which is responsive to the difference between said first signal and said second signal, wherein said third signal is scaled so as to be representative of the total heat per unit time which must be supplied to said first boiler and said second boiler by the combustion of said first fuel stream and said second fuel stream in order to maintain the actual pressure in said header conduit substantially equal to the desired pressure represented by said second signal;
means for establishing a fourth signal representative of the percentage of the total heat per unit time represented by said third signal which would be supplied to said first boiler in order to substantially optimize the energy efficiency of said first boiler and said second boiler;
means for multiplying said third signal by said fourth signal to establish a fifth signal representative of the heat per unit time which must be supplied to said first boiler by the combustion of said first fuel stream;
means for manipulating the flow of said first fuel stream and said first air stream to said first burner in response to said fifth signal;
means for establishing a sixth signal representative of the percentage of the total heat per unit time represented by said third signal which must be supplied to said second boiler in order to substantially maximize the energy efficiency of said first and second boilers;
means for multiplying said third signal by said sixth signal to establish a seventh signal which is representative of the total heat per unit time which must be supplied to said second boiler by the combustion of said second fuel stream; and
means for manipulating the flow of said second fuel stream and said second air stream to said second burner in response to said seventh signal.

4,583,498
METHOD OF CHANGING THE DIRECTION OF ROTATION OF AN INTERNAL COMBUSTION ENGINE, AND AN ENGINE APPLYING THE METHOD

Jean-Louis Magnet, St-Germain en Laye, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., S.A., Saint-Denis, France

Filed Apr. 17, 1985, Ser. No. 724,173
Claims priority, application France, Apr. 18, 1984, 84 06126
Int. Cl.[4] F01L 13/02
U.S. Cl. 123—41 R 5 Claims



1. A method of changing the direction of rotation of an internal combustion engine, and in particular of a marine engine, in which the camshafts include two cams for each tappet of a controlled member, each of said cams being suitable for use in one direction of rotation, the direction of rotation of the engine being changed by shifting said camshafts in translation, wherein, prior to shifting said camshafts, the tappets are rotated through one-fourth of a turn so as to put the axis of rotation of each tappet cam-follower wheel orthogonal to the direction of camshaft translation.

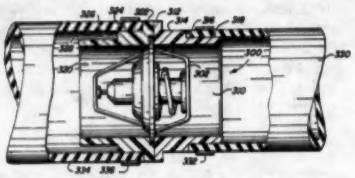
4,583,499
IN-LINE THERMOSTAT APPARATUS FOR AUTOMOTIVE VEHICLES

Stanton L. Hovey, 1024 W. 12th Pl., Tempe, Ariz. 85281

Continuation-in-part of Ser. No. 548,432, Nov. 3, 1983, abandoned. This application Oct. 16, 1984, Ser. No. 661,448
Int. Cl.[4] F01P 7/16
U.S. Cl. 123—41.1 4 Claims

1. Unitary thermostat apparatus for in-line installation in a radiator hose between a radiator and an engine, comprising, in combination:
a thermostat having a radially outwardly extending flange; and
cylinder means having a substantially constant diameter secured to the radially outwardly extending flange of the thermostat and including
a first cylindrical portion adapted to be secured to a first radiator hose portion,
a second cylindrical portion adapted to be secured to a

second radiator hose portion, whereby the unitary thermostat apparatus may be inserted into and removed from the radiator hose, and



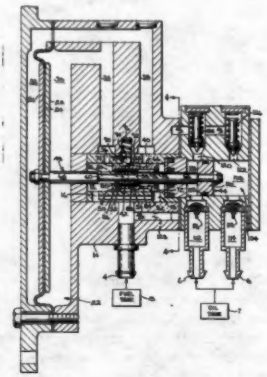
step means having different diameters for receiving hose portions of different diameters.

4,583,500

MARINE PROPULSION SYSTEM WITH AUTOMATIC OIL-FUEL MIXING

James M. Hundertmark, Fond du Lac, Wis., assignor to Brunswick Corp., Skokie, Ill.

Filed Jan. 25, 1985, Ser. No. 695,225
Int. Cl.[4] F02B *33/04*
U.S. Cl. 123—73 AD **20 Claims**



1. For a two cycle crankcase compression internal combustion engine, an oil-fuel mixing valve having a fuel inlet, an oil inlet, and an oil-fuel outlet, and operated by a pressure differential between said fuel inlet and said oil-fuel outlet, comprising:

a valve housing;

a pressure-differential working chamber in said housing;

a movable diphragm in said working chamber dividing said working chamber into first and second sections;

first and second transfer passages communicating respectively with said first and second sections of said working chamber on respective first and second sides of said diaphragm;

cyclic transition means having a first half cycle providing communication between said fuel inlet and said first transfer passage and between said second transfer passage and said oil-fuel outlet such that fuel entering said fuel inlet flows through said first transfer passage to said first section of said working chamber on said first side of said diaphragm to move said diaphragm to expel fuel from said second section of said working chamber through said second transfer passage to said oil-fuel outlet, said transition means having a second half cycle providing communication between said fuel inlet and said second transfer passage and between said first transfer passage and said oil-fuel outlet such that fuel entering said fuel inlet flows through said second transfer passage to said second section of said working chamber on said second side of said diaphragm to move said diaphragm to expel fuel from said first section of said working chamber through said first transfer passage to said oil-fuel outlet; and

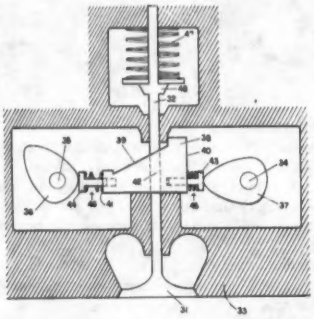
oil pump means driven by movement of said diaphragm to operatively pump oil from said oil inlet to said oil-fuel outlet.

4,583,501

DEVICE FOR CONTROLLING THE PHASED DISPLACEMENT OF ROTATING SHAFTS

John K. Williams, 4121 Cascade Rd., Atlanta, Ga. 30331

Continuation-in-part of Ser. No. 413,520, Aug. 31, 1982, Pat. No. 4,476,823. This application Oct. 13, 1983, Ser. No. 541,515
Int. Cl.[4] F01L *1/34*
U.S. Cl. 123—90.15 **4 Claims**



1. A device for raising and lowering a valve which comprises a valve having an elongated valve stem extending perpendicular thereto, said valve stem having a longitudinal slot extending for a portion of its length, a wedge shaped valve lifter means slidably traversing said slot perpendicular to said stem and having an inclined upper surface such that the height of one end of said wedge is less than the height of said slot and the height of the other end of the wedge is greater than the height of said slot, resilient means disposed on either side of said wedge for exerting a lateral movement thereon, to cause transverse sliding thereof through said slot whereby to cause raising or lowering of said valve, the end of said valve stem remote from said valve being provided with resilient return means for maintaining downward pressure on said stem so that the top of said slot is in constant contact with the inclined upper surface of said sliding wedge.

4,583,502

WEAR-RESISTANT MEMBER FOR USE IN AN INTERNAL COMBUSTION ENGINE

Kentaro Takahashi; Takeshi Hiraoka; Yoshikatsu Nakamura, and Masajiro Takeshita, all of Saitama, Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

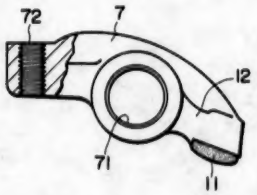
Filed Feb. 20, 1980, Ser. No. 122,902
Claims priority, application Japan, Feb. 26, 1979, 54-20740
Int. Cl.[4] F01L *3/02*
U.S. Cl. 123—90.39 **8 Claims**

1. A wear-resistant member for use in an internal combustion engine comprising:

(a) a ferrous sintered body; and

(b) a ferrous base body, said ferrous sintered body and said ferrous base body being shaped so as to have a common surface, said sintered body being bonded to said ferrous base body by diffusing diffusion elements of a compressed powder body into said ferrous base body during the sintering of said compressed powder body, said ferrous sintered

body being a sintered alloy produced in a liquid-phase state consisting of 0.5 to 7.0% by weight carbon, 0.1 to 5.0% by weight phosphorus, 8.0 to 30.0% by weight chromium, at least one material selected from the group consisting of nickel, copper, cobalt, tungsten, and molybdenum, wherein the combined amount of said nickel, copper, cobalt, tungsten, and molybdenum does not exceed 10% by weight, the balance being iron, and the porosity of said sintered body being in the range of 0.2 to 10% by volume at least 40% of which is pores having a pore size of not more than 250μ.



4,583,503
APPARATUS FOR CONTROLLING THE ROLLING OF AN ENGINE

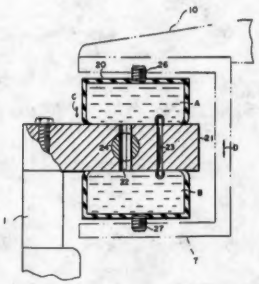
Naotake Kumagai, Aichi; Minoru Tatemoto, Okazaki; Yoji Itoh, Nagoya, and Tokushige Inuzuka, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1984, Ser. No. 598,194

Claims priority, application Japan, Apr. 15, 1983, 58-56181[U]; Apr. 15, 1983, 58-56183[U]; Apr. 15, 1983, 58-56186[U]

Int. Cl.[4] B60K *5/12*

U.S. Cl. 123—192 R 10 Claims



1. An apparatus for electronically controlling rolling of an automobile engine, comprising:

a casing filled with liquid, thus forming a liquid chamber;

a partition secured to the engine and dividing said liquid chamber into two sections;

fastening means for fastening a wall of said casing which faces the partition to a chassis of an automobile;

an orifice member comprising at least one orifice formed in said partition and a rotary spool for adjusting the opening of the orifice;

engine-roll control means comprising a drive mechanism for rotating said rotary spool;

first speed detecting means for detecting whether the engine speed has fallen below a prescribed level;

second speed detecting means for detecting whether an accelerator pedal has been depressed at a speed higher than a predetermined value;

a mechanism for operating the engine-roll control means; and

a drive circuit for driving the engine-roll control means operating mechanism in response to output signals from the first and second speed detecting means.

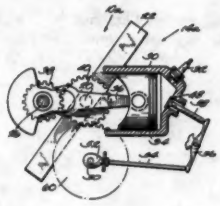
4,583,504
LAWN MOWER GEAR REDUCTION SYSTEM

Richard L. Morris, Collierville, Tenn., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 16, 1984, Ser. No. 631,496

Int. Cl.[4] A01D *34/42;* F01L *1/02;* F02F *7/00*

U.S. Cl. 123—195 R 12 Claims



1. A lawn mower comprising a blade housing, an internal combustion engine supported on said blade housing and including a crankshaft, an output shaft rotatably supported by and centrally of said blade housing and including an end and a part spaced from said end, a cutting blade fixedly mounted on said end of said output shaft and housed within said blade housing, means fixed to said output shaft and to said crankshaft and operably connecting said part of said output shaft to said crankshaft such that rotation of said crankshaft causes rotation of said output shaft, a camshaft extending parallel to said output shaft and rotatably supported by said blade housing, and means fixed on said output shaft and on said camshaft and operably connecting said output shaft to said camshaft to cause rotation of said camshaft in response to rotation of said output shaft.

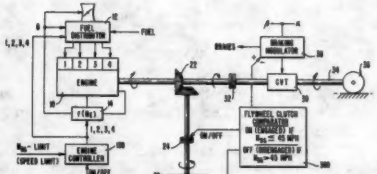
4,583,505
CONTINUOUSLY CHARGED FLYWHEEL TYPE POWER DELIVERY SYSTEM

Andrew A. Frank, and Takashi Omitsu, both of Madison, Wis., assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Sep. 17, 1984, Ser. No. 651,462

Int. Cl.[4] F02D *7/00;* B60K *9/04*

U.S. Cl. 123—198 F 12 Claims



1. In a method of controlling the operation of a flywheel-type power delivery system having an energy-storing flywheel, an internal combustion engine operatively coupled to the flywheel for delivering power to the flywheel, and a continuously variable ratio transmission operatively coupled to

the flywheel for delivering power to an output shaft, the improvement comprising:

predetermining a desired maximum output shaft speed limit; and

adjusting the working displacement of the engine in proportion to the output shaft speed limit, whereby the efficient power output of the engine is tailored to the power requirements of the system.

5. A method according to claim 1 further including the step of maintaining the operating speed of said flywheel within a predetermined range.

4,583,506

ELECTRONICALLY CONTROLLED TYPE GOVERNOR FOR DIESEL ENGINES

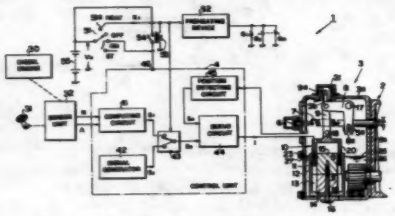
Kenji Okamoto, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Japan

Filed Apr. 3, 1985, Ser. No. 719,379

Claims priority, application Japan, Apr. 3, 1984, 59-65248

Int. Cl.[4] F02D *1/04*

U.S. Cl. 123—357 **6 Claims**



1. An electronically controlled type governor for diesel engines, said governor comprising:

an electric actuator for adjusting the position of a fuel adjusting member of a fuel injection pump;

means for producing a preheating signal indicating the execution of a preheating operation by an auxiliary device for the starting of the diesel engine;

means responsive to at least one condition signal for producing a first target signal indicating the position of said fuel adjusting member necessary for obtaining the optimum amount of fuel injection;

means for producing a second target signal for the warming-up operation of said electric actuator;

a selecting means responsive to the preheating signal for selecting either said first or second target signal, said second target signal being selected when said preheating operation is carried out by said auxiliary device and said first target signal being selected when the preheating operation has been terminated; and

an output means responsive to the output from said selecting means for producing a driving signal for said electric actuator.

4,583,507

ENGINE SYSTEM

Godfrey Greeves, Hatch End, and Paul Lakra, London, both of England, assignors to Lucas Industries public limited company, Birmingham, England

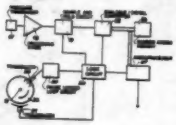
Filed Oct. 26, 1983, Ser. No. 547,379

Claims priority, application United Kingdom, Nov. 6, 1982, 8231761

Int. Cl.[4] F02P *5/12*; F02M *59/20*

U.S. Cl. 123—425 **6 Claims**

1. An engine system including an engine having a piston, means for feeding fuel to a combustion chamber of the engine, means for varying the timing of ignition of fuel in the combustion chamber and means for sensing the combustion of fuel comprising a device responsive to a condition within the combustion chamber, said condition occurring when combustion of fuel starts in the combustion chamber in use, said device providing an output signal, a memory circuit for storing said output signal and a comparison circuit for comparing the stored output signal over a period of the combustion chamber



cylce during which combustion of fuel will occur, obtained from said device with a similar signal produced in another cycle of operation of the combustion chamber, the output of said comparison circuit being utilized as the signal indicative of the commencement of combustion fuel in the combustion chamber.

4,583,508

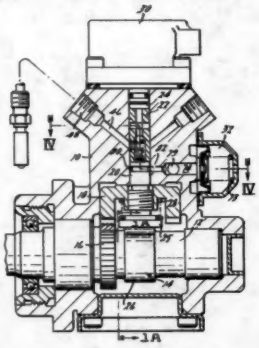
POSITIVE DISPLACEMENT ELECTRONIC FUEL INJECTION PUMP

Michael M. Schechter, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1985, Ser. No. 689,359

Int. Cl.[4] F02M *41/00*

U.S. Cl. 123—449 **3 Claims**



1. A fuel injection pump of the plunger, spill port type, including a single plunger reciprocably and rotatably mounted in a plunger barrel, an engine driven camshaft having gear means and a number of camlobes thereon for reciprocating and rotating said plunger a number of times for each revolution of the camshaft through a number of pumping upstrokes and fuel intake downstrokes for injecting fuel sequentially into a number of engine cylinders, the plunger barrel defining a fuel fill/spill chamber at the end of the plunger connected to a solenoid valve controlled spill port for pressurization of the chamber during the upstroke of the plunger upon closure of the spill port by the valve, the plunger having a number of internal axially spaced passages connected to the chamber for filling the chamber with fuel on the fuel intake upstroke of the plunger or alternately directing fuel from the chamber to a fuel injection nozzle during pressurization of the chamber, means connecting one of the internal passages to a fuel supply passage and another passage to a fuel injection nozzle line past a check

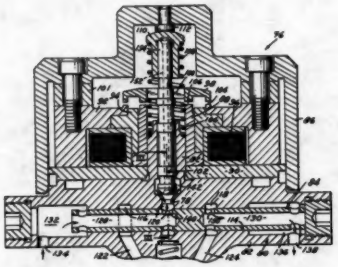
valve in the other passage, the passages being spaced such that rotation and reciprocation of the plunger through one stroke connects the chamber to one passage which disconnecting the chamber from the other passage, and vice-versa during the next successive stroke of the plunger, the other passage being connected successively one at a time to each injection line in the engine upon rotation of the camshaft, the engine having at least four cylinders, and the camshaft having four camlobes on a single cam, the lobes each being 90° in extent with a peak and an essentially long flat surface inbetween peaks providing a slower upstroke of the plunger than the downstroke thereby providing a longer time for injection than for fuel intake.

4,583,509

DIESEL FUEL INJECTION SYSTEM

Michael M. Schechter, Southfield, and Aladar O. Simko, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1985, Ser. No. 689,202
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—451 **7 Claims**



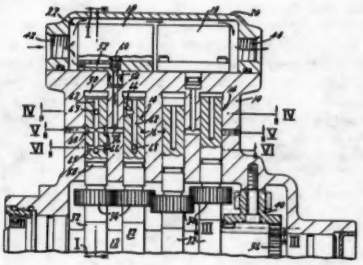
1. A fuel injection pump of the multiple plunger spill port type for an automotive type internal combustion engine, the pump including a plurality of at least four axially spaced engine camshaft driven pump plungers grouped in pairs and sequentially and in succession moved in one direction through a fuel pumping stroke and oppositely through a fuel intake stroke, a fuel pressurization/supply chamber contiquous to the end of each plunger for pressurization of the fuel therein or supply of fuel thereto from a supply passage upon coordinate movement of the plunger, fill/spill passage means connected to a single fuel return spill port and in parallel flow relationship to each of the plunger bores as a function of the position of the plungers, each plunger having a pair of internal passages connected at all times to its chamber and alternately alignable with the supply or fill/spill passage means as a function of the position of the plunger, a fuel discharge passage operatively connecting each of the chambers to an individual engine cylinder, a single spill port control valve movable to block or permit the spill of fuel through the spill port to a return line to control the pressurization of fuel in all of the fuel chambers and associated discharge passages, a single solenoid connected to the spill control valve for moving it to block or unblock the spill port, and a single shuttle valve operatively associated with all of the fill/spill passage means and spill port reciprocably movable between positions to sequentially connect the plunger chambers one at a time in succession to the spill port during the pumping pressurization stroke of its plunger for the injection of fuel to an individual cylinder while the other chambers are in various stages of being refilled with fuel and preparing for pressurization upon successive actuation of the plungers by the camshaft.

4,583,510

ELECTROMAGNETIC DISTRIBUTOR-TYPE MULTIPLUNGER FUEL INJECTION PUMP

Michael M. Schechter, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1985, Ser. No. 689,126
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—458 **4 Claims**



1. A fuel injection pump of the multi-plunger, fuel distributive spill port type for use with a multi-cylinder engine for controlling the sequential and phased injection of fuel into at least four engine cylinders through the reciprocation and rotation of only a pair of plungers, including a pair of plungers each slidably mounted in a plunger barrel for reciprocation by an engine driven camshaft through a pumping stroke in one direction and oppositely through a return fuel intake stroke, the camshaft having means thereon reciprocating each plunger through four strokes for each camshaft revolution, and rotating each plunger one revolution for each revolution of the camshaft, a fuel spill/fill chamber defined at the end of each plunger, each plunger having a number of axially spaced internal passages connected to the chamber and alignable on a one-at-a-time basis as a function of reciprocation and rotation of the plunger first with a low pressure fuel supply passage for filling of the chamber with fuel during the intake stroke of its plunger, and secondly with a fuel spill passage for the passage of fuel thereinto from the chamber during the pumping stroke of its associated plunger, and thirdly, with a pair of angularly spaced fuel discharge passages each containing a spring closed delivery valve connected to an individual engine cylinder for delivery of fuel thereto upon pressurization of the fuel in the chamber above a predetermined value, and a single solenoid operable valve movable for blocking the spill passage to thereby permit pressurization of the plunger chamber during its pumping stroke, the fuel delivery volume being controlled by the duration of energization of the solenoid, whereby only one engine cylinder is injected with fuel at any one time.

4,583,511

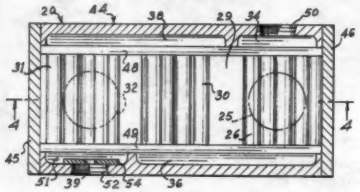
CARBURETION APPARATUS

Harry E. Greene, Rte. 1, Box 217, Cataula, Ga. 31804

Filed Oct. 20, 1980, Ser. No. 198,855
Int. Cl.[4] F02M *31/00*
U.S. Cl. 123—545 **4 Claims**

1. A carburetion apparatus, for a combustion engine including carburetor means for creating a fuel-air mixture, and an intake manifold for receiving said fuel-air mixture, said carburetion apparatus comprising a body having a central passage therethrough, a plurality of baffles across said central passage, one end of said body receiving said carburetor means and defining an entrance for passage of said fuel-air mixture from said carburetor means to said central passage, the opposite end of said body being fixed to said intake manifold and defining an exit therein for passage of said fuel-air mixture from said central passage into said intake manifold, said plurality of baffles

being located in said central passage between said entrance and said exit and constituting a sufficient restriction to cause a pressure drop between said carburetor means and said intake manifold, each baffle of said plurality of baffles comprising a plurality of tubular members extending across said central passage such that said fuel-air mixture engages said tubular members as said fuel-air mixture flows through said central passage, and means for heating said plurality of tubular members, said central passage being generally horizontal, said entrance and said exit being horizontally displaced from each other, said engine further including an exhaust manifold for receiving exhaust gases from said engine, and an exhaust pipe for carrying said exhaust gases from said exhaust manifold, a first baffle of said plurality of baffles including a first plurality of tubular members and being adjacent to said entrance, a second baffle of said plurality of baffles including a second plurality of tubular members and being between said entrance



and said exit, a third baffle of said plurality of baffles including a third plurality of tubular members and being adjacent to said exit, and first pipe means for conveying some of said exhaust gases from said exhaust manifold to a first end of said first plurality of tubular members, said tubular members in said first, second and third plurality of tubular members being so staggered as to preclude laminar fluid flow from said entrance to said exit, and including front wall means defining a first connecting passage for connecting a second end of said first plurality of tubular members to a first end of said second plurality of tubular members, and a rear wall means defining a second connecting passage for connecting a second end of said second plurality of tubular members to a first end of said third plurality of tubular members, and second pipe means connecting a second end of said third plurality of tubular members to said exhaust pipe, the arrangement being such that said exhaust gases pass successively through said baffles and back to said exhaust pipe.

4,583,512

FUEL FEED AND FUEL VAPORIZATION SYSTEM

Paul R. Gardner, and Elmer W. Gardner, Jr., both of 3359 Alexis Rd., Cincinnati, Ohio 45239

Filed Feb. 22, 1983, Ser. No. 456,527
Int. Cl.[4] F02M *31/00*
U.S. Cl. 123—557 **1 Claim**

1. In an internal combustion engine including a fuel feed and vaporization system, said system having a fuel tank containing a liquid fuel supply, a supply and return fuel line connected to said fuel tank, wherein the improvement comprises:

an apparatus for providing a predetermined and preset quantity of preheated fuel and air to the combustion chamber,

said supply line extending between the fuel tank and the apparatus,

and the return line connected at one end to the supply line and at the other end to the fuel tank,

at least two fuel pumps positioned in said supply line for pumping liquid fuel to said apparatus,

at least one atomizer positioned in said supply line between the pump and apparatus for atomizing the fuel prior to its admission to the apparatus,

said atomizer including multiple holes for passing the fuel through in order to atomize the fuel,

a first predetermined and preset electric flow meter valve positioned in the fuel supply line between the two pumps and upstream of where the return line connects to the supply line to return an unused portion of the fuel from the supply line to the fuel tank,

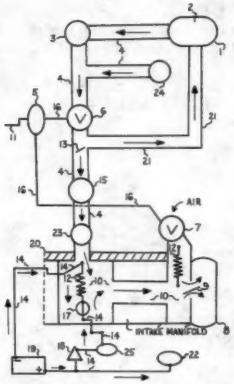
said apparatus including a housing containing at least three electric heat exchangers,

an intake opening connected with said fuel supply line,

said fuel passing in heat exchange relationship with some of said electric heat exchangers,

an air intake opening into said housing,

said air passing through a portion of the housing separate from the fuel and in heat exchange relationship with at least one of the electric heat exchangers prior to its mixing with fuel and being fed to an outlet in said housing which connects to the intake manifold of the internal combustion engine,



a second predetermined and preset electric flow meter valve in an air intake line leading to the air intake opening,

a sliding potentiometer connected to the accelerator fuel lever and receiving input therefrom,

said potentiometer providing an output variable electric current to said first and second flow meter valves to proportionately open said valves according to the demand for liquid fuel provided by the input of the movement of the accelerator feed lever,

whereby the fuel and air are supplied to the apparatus in such a manner as to provide a predetermined and preset quantity of electrically preheated fuel and air to the engine according to piston displacement and energy requirements.

4,583,513

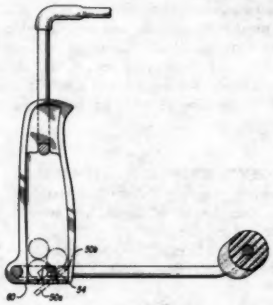
FOLDABLE WRIST BRACED SLINGSHOT WITH AMMUNITION STORAGE AND DISPENSING MEANS

Mark O. Ellenburg, P.O. Box 894, F.D.R., New York, N.Y. 10022, and H. Steve Ellenburg, 3468 Iris Ct., Boulder, Colo. 80302

Filed Dec. 19, 1983, Ser. No. 563,173
Int. Cl.[4] F41B *3/00*
U.S. Cl. 124—20 A **6 Claims**

1. A folding slingshot comprising a yoke having a hollow handgrip for storing slingshot ammunition therein, a pivotable closure means for closing off the bottom of said hand grip, means for pivotably mounting said closure means at the bottom of the hand grip such that inward pressure on one end of said closure means provides outward movement of the other end of said closure means from a first, closed position to a second, open position so as to dispense ammunition from within said

hand grip, means on the base of said hand grip for frictionally engaging said other end of said closure means in the closed position thereof to close off the inside of said hand grip while preventing inward movement of said other end, wrist brace means frictionally, detachably and pivotably mounted to the hand grip near the base thereof, said wrist brace comprising a



pair of longitudinal members diverging rearwardly from the hand grip and spaced apart to receive the wrist therebetween and an end member integral with said longitudinal members engageable with the user's wrist and protruding stop members on said hand grip for preventing further rotation of said wrist brace.

4,583,514

BALL THROWING MACHINE

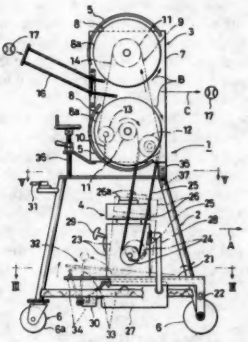
Fujio Nozato, 33-20, Izuo 1-chome, Taisho-ku Osaka-shi, Osaka-fu, Japan

Filed Jan. 4, 1984, Ser. No. 568,164

Claims priority, application Japan, Jul. 25, 1983, 58-115962[U]

Int. Cl.⁴ F41B *3/00*

U.S. Cl. 124—78 **3 Claims**



1. A ball throwing machine including a pair of rotary wheels, a counter-rotating mechanism for rotating said wheels in opposite directions, and an engine for driving the rotary wheels through said counter-rotating mechanism, wherein a ball is nipped between the outer peripheral surfaces of the rotary wheels and is thereby thrown, said ball throwing machine being characterized in that said rotary wheels and counter-rotating mechanism are attached to an upper support platform, the engine is pivotally supported for vertical movement to a lower support platform, said engine has an output pulley, while said counter-rotating mechanism has an input pulley, with a transmission belt being entrained around said pulleys, the slack of the transmission belt caused by upward movement of the engine cuts off power transmission between the two pulleys, while the tightening of the transmission belt caused by downward movement and the weight of said engine allows power transmission between said pulleys, and said upper support platform being removably attached to the top of said lower support platform.

4,583,515

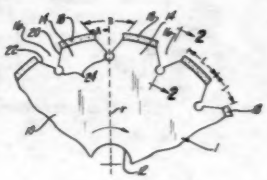
ABRASIVE CUTTING WHEEL FOR CUTTING ROCK-LIKE MATERIAL

Paul B. Ballenger, Urbana, Mo., assignor to Federal-Mogul Corporation, Southfield, Mich.

Continuation of Ser. No. 646,041, Aug. 30, 1984, abandoned, which is a continuation of Ser. No. 403,200, Jul. 29, 1982, abandoned. This application Feb. 25, 1985, Ser. No. 705,411

Int. Cl.⁴ B28D *1/04*

U.S. Cl. 125—15 **22 Claims**



1. A rotatable cutting wheel for wet cutting of rock or rock-like material comprising:

a circular generally disc-shaped drive core having a plurality of circumferentially extending and circumferentially spaced support surfaces, a substantial number of said support surfaces having affixed thereto an abrasive cutting material means capable of cutting an abradable rock or rock-like material,

said core having a plurality of gullets, a substantial number of said gullets extending between a closed gullet end located a substantial radial distance inwardly of said support surfaces and an open gullet end defined by the space between adjacent pairs of said support surfaces,

the ratio of the circumferential width of said open gullet end to said circumferential length of each of said adjacent pair of said support surfaces being in the range of approximately 0.83 to 1.33, the total circumferential length of said support surfaces being approximately equal to the total circumferential width of all of said gullets at the open ends thereof, and the radial distance between the open and closed ends of each said gullet being at least around 0.7 of said circumferential width of the corresponding open gullet end,

whereby each of said gullets and the respective open gullet end cooperate to define a fluid passageway having a substantial volumetric capacity through which a fluid coolant can be circulated in substantial amounts to the cutting area, cool the drive core in the area immediately adjacent the abrasive cutting material means and carry away swarf therefrom.

4,583,516

FIREPLACE INSERT

Tommy W. Patterson, P.O. Box 65, Hayesville, Ohio 44838

Continuation-in-part of Ser. No. 121,815, Feb. 15, 1980, abandoned. This application Mar. 8, 1982, Ser. No. 356,124

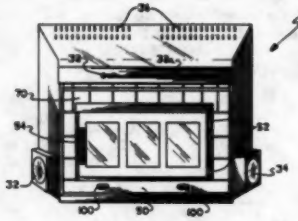
Int. Cl.⁴ F24B *7/00*

U.S. Cl. 126—121 **1 Claim**

1. A fireplace insert for a fireplace having a front face surrounding the fireplace opening thereto which comprises:

(a) a firebox having a front opening;

(b) an air shroud surrounding the firebox and creating an air space around the sides and top of the firebox;
(c) an exhaust flue at the top back of the firebox and communicating in sealed relationship through the air shroud;
(d) a front hood attached to and communicating with the air shroud and defining a flag surface to engage with the face of the fireplace when the insert is positioned thereinto and having about a 60° angle on its side and top surfaces, converging towards the room to provide a larger exposed hood surface within the room when the fireplace insert is fully in position in the fireplace;
(e) seal means between the hood and the fireplace face to provide a substantial fluid seal between the insert and the fireplace;



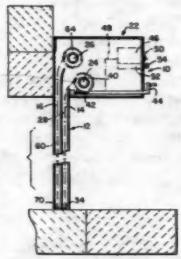
(f) means to provide entrance of room air into the base of the hood to circulate around the firebox and discharge back into the room;
(g) baffle means in the air space to direct the major flow of air along the lower sides and to the back of the firebox, and wherein said baffle means has an opening therein adjacent the front of the firebox to direct cool air to the inside portions of the front hood; and
(g) a continous baffle means between the top of the firebox and the top of the shroud of at least one inch spacing from each surface and of substantially the same size as each surface.

4,583,517

FIREPLACE SCREEN

James Hilton, 3945 Rigel Ave., Lampoc, Calif. 93436, and Joel S. Crosby, Santa Barbara, Calif., assignors to James Hilton, Lampoc, Calif.

Filed Sep. 27, 1983, Ser. No. 536,261
Int. Cl.⁴ F23L *5/02*; E05F *15/20*
U.S. Cl. 126—135 **12 Claims**



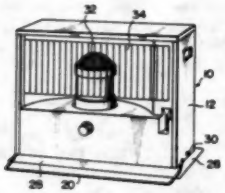
1. A fireplace screen comprising:
a frame defining a central opening and including first and second pairs of vertical guide tracks along opposite lateral sides of said central opening;
a housing mounted above said frame;
a first flexible covering element mounted for movement in said first pair of guide tracks, said first flexible covering element comprising a perforate mesh formed of heat resistant material;
a second covering element mounted for movement in said second pair of guide tracks, said second covering element comprising an imperforate heat resistant material; and
moving means mounted in said housing for individually raising and lowering said first and second covering elements in said guide tracks thereby covering and uncovering said central opening, said moving means comprising an electric motor operatively connected to said first covering element, and time delay means for automatically lowering said first covering element a predetermined time after said first covering element has been raised.

4,583,518

SPACER STRUCTURE FOR HEATING APPLIANCE

Kazuharu Nakamura, Nagoya; Yutaka Nakanishi, Kounan, and Junzi Mizuno, Nagoya, all of Japan, assignors to Toyotomi Kogyo Co., Ltd., Aichi, Japan

Filed Oct. 11, 1984, Ser. No. 659,820
Claims priority, application Japan, Oct. 11, 1983, 58-157926[U]
Int. Cl.⁴ F24C *15/36*
U.S. Cl. 126—201 **12 Claims**



1. A spacer structure for a heating appliance comprising:
an outer casing of said heating appliance having a pair of through-holes formed at the lower portions of opposite side walls thereof;
a spacer comprising a spacer body of a rigid material formed into a substantially U-shape and a pair of mounting means for engagement with said through-holes of said outer casing of said heating appliance to rotatably securely mount said spacer body to said heating appliance;
a saucer on which said heating appliance is adapted to be securely put, said saucer having a periphery outward extending from said heating appliance to a degree sufficient to engage said spacer body when said saucer is attached to said heating appliance; and,
means for preventing release of the engagement between said mounting means of said spacer and said through-holes of said outer casing when said spacer body is engaged by said saucer and for allowing said release when said saucer is not attached to said heating appliance.

4,583,519

HEAT EXCHANGER

Heinz Grünert, Emmering; Manfred Eckert, Dachau; Johann Münich, Munich; Henning von Petersdorff, Puchheim; Manfred Mix, Munich, and Wulf Radtke, Planegg, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

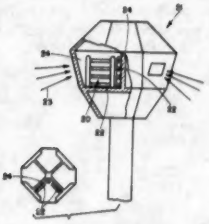
Filed Feb. 22, 1984, Ser. No. 582,335
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1983, 3306800
Int. Cl.⁴ F24J *2/46*
U.S. Cl. 126—418 **6 Claims**

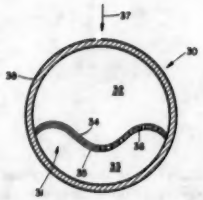
1. A heat exchange tube comprising:
outside longitudinally extending heat transmissive walls forming a conduit for conducting a heat transfer fluid, the

outside walls including at least first and second longitudinally extending wall portions, the first wall portion absorbing a first heat energy and the second wall portion absorbing a second heat energy; and

insert means supported and longitudinally extending within the outside walls and dividing the conduit into at least first and second flow passageways;

the first flow passageway being adjacent the first wall portion, and the second flow passageway being adjacent the second wall portion; and





the ratio of the transversely extending cross-sectional areas of the first and second flow passageways being equal to the ratio of the heat energies absorbed by the first and second wall portions of the outside walls;

wherein the heat energy absorbed by the heat transmissive walls varies over time, and the insert means includes a bimetallic element to change the shape of the insert means and the shape of the flow passageways in response to changes in the difference between the temperatures of the fluids in the first and second fluid passageways to maintain the the temperature of the heat transmissive walls uniform along transversely coplanar portions thereof.

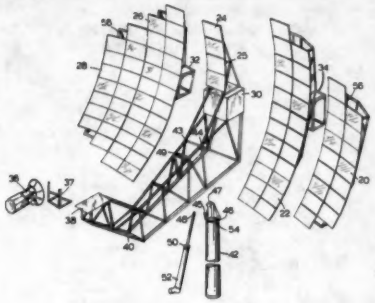
4,583,520

BALANCED SOLAR CONCENTRATOR SYSTEM

John J. Dietrich, Newport Beach; Donald A. Steinmeyer, Tustin, and Direk T. Hartmann, Huntington Beach, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 1, 1984, Ser. No. 636,749
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—424 **8 Claims**

1. A curved reflector assembly comprising a curved reflector, heat energy receiver means located at the focus or the reflector, heat energy receiver support beam means attached to the reflector which hold the heat energy receiver at the focus, and base support means comprising a pedestal attached to the receiver support beams at a point between the reflector and the receiver such that the base support means include tracking drive means including elevation and azimuth drives capable of accurately positioning the assembly relative to the path of the sun wherein the elevation drive means are located between the



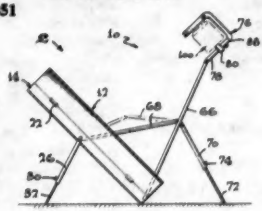
pedestal and a point between the pedestal-receiver support beam means attachment point and the receiver.

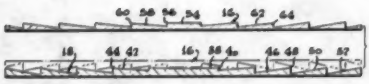
4,583,521

PORTABLE SOLAR COOKING APPARATUS

Bart C. Ciambella, 326 Woodward Dr., West Seneca, N.Y. 14224; Daryl P. Ciambella, 100 Randy Way, Cheektowaga, N.Y. 14227, and Perry A. Ciambella, 370 Peralta Ave., Long Beach, Calif. 90813

Filed Apr. 17, 1985, Ser. No. 724,249
Int. Cl.⁴ F24J *2/02*
U.S. Cl. 126—451 **20 Claims**





1. A portable solar cooking apparatus comprising:

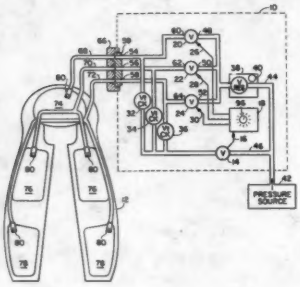
at least first and second reflector panels, said first reflector panel having a shaped surface configuration for reflecting solar radiation generally toward a focal point, said second reflector panel also having a shaped surface configuration for reflecting solar radiation toward the focal point, said surface configuration of said first panel interfitting with said surface configuration of said second panel when said panels are placed face-to-face so that said first and second panels mutually support each other and occupy less thickness than without interfitting; and

means for supporting material to be heated adjacent the focal point.

4,583,522
SEQUENTIALLY PRESSURIZED FLIGHT SUIT

Armand Aronne, Massapequa, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,567
Int. Cl.[4] A61H *1/00*
U.S. Cl. 128—1 A 11 Claims



1. In combination with a flight suit having pneumatic bladders for applying pressure to desired areas on a person wearing the flight suit, a plurality of inlet conduits, each bladder communicating with one of said plurality of inlet conduits. a device for pressurizing the bladders in a desired sequence, said device comprising:

a plurality of sequencing valves in one-to-one correspondence with the inlet conduits, each sequencing valve including an inlet port and an outlet port;

first connecting means for connecting the outlet port of each sequencing valve to a corresponding inlet conduit;

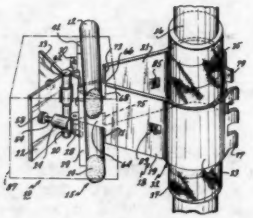
timing control means for providing control signals to the sequencing valves in accordance with the desired sequence for pressurizing the bladders; and

second connecting means for connecting the inlet ports to a pneumatic pressure source.

4,583,523
IMPLANTABLE HEART ASSIST DEVICE AND METHOD OF IMPLANTING SAME

Bernard L. Kleinke, San Diego, Calif., and Maynard L. Freeman, Lisle, Ill., assignors to Lloyd & Associates, Lisle, Ill.

Filed Jul. 2, 1984, Ser. No. 627,113
Int. Cl.[4] A61F *1/24;* A61H *31/00*
U.S. Cl. 128—1 D 16 Claims



1. An implantable device for assisting the functioning of the heart of a person, comprising:

an elongated assembly for extending transversely between the ribs of the person from the ribs to the aorta of the heart to be assisted, said assembly including means for engaging externally and compressing the aorta at the front end thereof;

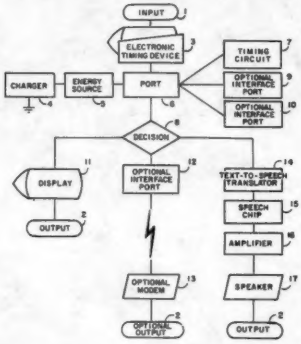
motive means for actuating and de-activating said compressing means cyclically to help pump blood through the aorta; and

housing means for said elongated assembly said housing including mounting means for supporting said device from the ribs of the person, said housing having a distal end portion for projection outside of the rib cage for permitting access to the interior of said assembly while in place within the body.

4,583,524
CARDIOPULMONARY RESUSCITATION PROMPTING

Donald C. Hutchins, 60 Brookdale Dr., Springfield, Mass. 01104

Filed Nov. 21, 1984, Ser. No. 673,838
Int. Cl.[4] A61B *19/00*
U.S. Cl. 128—1 R 8 Claims



1. Cardiopulmonary resuscitation prompting apparatus for providing audible verbal guidance to rescue personnel trained in CPR under emergency conditions for aiding a victim requiring CPR techniques comprising,

keying means for entering information signals representative at least of characteristics of said victim and the number of said rescue personnel relevant to proper performance of cardiopulmonary resuscitation techniques,

means responsive to the keyed information signals for providing output signals representative of proper steps to be taken in resuscitating said victim,

and electroacoustical transducing means responsive to said output signals for providing audible intelligible sound signals representative of the proper resuscitation steps to be taken by said rescue personnel in resuscitating said victim.

4,583,525
ARTIFICIAL HEART DRIVING APPARATUS

Akira Suzuki, Nishio; Takeharu Oumi, Tokyo; Sanshiro Takamiya, Nagoya, and Hideo Nakazawa, Saitama, all of Japan, assignors to Aisin Seiki K.K., Aichi, Japan

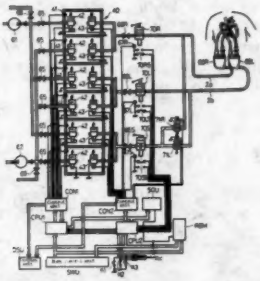
Division of Ser. No. 480,181, Mar. 28, 1983, Pat. No. 4,546,760.
This application Jun. 26, 1985, Ser. No. 749,067
Claims priority, application Japan, Mar. 30, 1982, 57-52141; Mar. 30, 1982, 57-52142; Mar. 30, 1982, 57-52143; Mar. 30, 1982, 57-45056; Mar. 31, 1982, 57-52933
Int. Cl.[4] A61B *19/00*
U.S. Cl. 128—1 D 13 Claims

1. An artificial heart driving apparatus comprising:

a first system including therein; a first solenoid valve having its input port connected to an output port of a positive pressure source; a first accumulator having an inner space connected to an output port of said first solenoid valve; a second solenoid valve having its input port connected to an output port of said first accumulator; a first pressure

detecting means for detecting pressure in a fluid path from the output port of said first solenoid valve to the input port of said second solenoid valve; a third solenoid valve having its input port connected to an output port of a negative pressure source; a second accumulator having an inner space connected to an output port of said third solenoid valve; a fourth solenoid valve having its input port connected to an output port of said second accumulator; a second pressure detecting means for detecting pressure in a fluid path from the output port of said third solenoid valve to the input port of said fourth solenoid valve; and an opening and closing valve means having its output port connected to an artificial heart and its input port connected to both the output port of said second solenoid valve and the output port of said fourth solenoid valve;

a second system including therein; a first solenoid valve having its input port connected to an output port of a positive pressure source; a first accumulator having an inner space connected to an output port of said first solenoid valve; a second solenoid valve having its input port connected to an output port of said first accumulator; a first pressure detecting means for detecting pressure in a fluid path from the output port of first solenoid valve to the input port of said second solenoid valve; a third solenoid valve having its input port connected to an output port of a negative pressure source; a second accumulator having an inner space connected to an output port of said third solenoid valve; a fourth solenoid valve having its



input port connected to an output port of said second accumulator; a second pressure detecting means for detecting pressure in a fluid path from the output port of said third solenoid valve to the input port of said fourth solenoid valve; and an opening and closing valve means having its output port connected to an artificial heart and its input port connected to both the output port of said second solenoid valve and the output port of said fourth solenoid valve;

a control board;

a change over instructing switch means; and

a control unit which controls opening and closing of said first solenoid valve in said first system based on both the pressure detected by said first pressure detecting means in said first system and a first set value preset in accordance with an instruction from said control board, controls opening and closing of said third solenoid valve in said first system based on both the pressure detected by said second pressure detecting means in said first system and a second set value present in accordance with an instruction from said control board, and controls opening and closing of said second solenoid valve and said fourth solenoid valve in said first system at predetermined time intervals, respectively; which upon change over instructions from said change over instructing switch means, controls opening and closing of said first solenoid valve in said second system based on both the pressure detected by said first pressure detecting means in said second system and a first set value preset in accordance with an instruction from said control board, controls opening and closing of said third solenoid valve in said solenoid valve in said second system based on both the pressure detected by said second pressure detecting means in said second system and a second set value preset in accordance with an instruction from said control board and controls opening and closing of said second solenoid valve and said fourth solenoid valve in said second system at the substantially same time intervals as those for said second solenoid valve and said fourth solenoid valve in said first system, respectively.

4,583,526

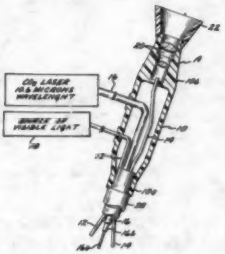
FLEXIBLE ENDOSCOPE STRUCTURE

Mir A. Ali, 26430 Via Marquette, Lomita, Calif. 90717

Filed Jan. 14, 1985, Ser. No. 691,510

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—6 **6 Claims**



1. In combination with a source of visible light and a source of infra red light an endoscope that includes first and second elongate flexible elongate fiber optics that are adjacently disposed and transmit visible light from said source to an internal tissue site of a patient on which a surgical operation is to be performed and permits a surgeon to view said site when illuminated; a third elongate flexible non-toxic fiber optic adjacently disposed to said first and second fiber optics and coupled to said source of infra red light for supplying infra red light to said site to perform said surgical operation, said third fiber optic including:

a. a core of true amorphous chalcogenide glass of a diameter greater than the wave length of said infra red light;

b. a longitudinally extending cladding that extends around said core and is bonded thereto, said cladding having an index of refraction greater than that of said chalcogenide glass; and

c. means for holding said first, second and third fiber optics together as an elongate flexible bundle that may be manipulated by a surgeon.

4,583,527

DISPOSABLE CUSHIONING DEVICE FOR A LARYNGOSCOPE

Belmont S. Musicant, 3260 Club Dr., Los Angeles, Calif. 90064, and William W. Musicant, 17650 Tarzana St., Encino, Calif. 91316

Filed Dec. 24, 1984, Ser. No. 685,075

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—11 **4 Claims**

1. A disposable cushioning device for use in combination with a laryngoscope which includes a handle containing a battery is connected to a first electrical contact pad on the upper surface of the handle and a blade having a lateral shelf having a top surface, an upright wall and a blade portion extending in a direction opposite to the shelf wherein the blade portion is curved from its base to its tip which is in the form of a rounded transverse bar of the same width as the blade por-

tion, the base of the blade portion is hinged to the top of the handle and the blade carries an electric lamp which is connected to a second electrical contact pad in the base of the blade portion, said disposable cushioning device comprising:

a. an elongated layer of soft pliable material which is disposed on the entire top surface of the shelf of the blade; and

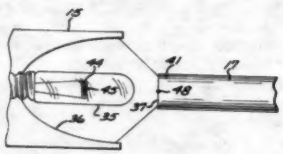
b. securing means for securing said elongated layer of soft pliable material to the entire top surface of the shelf of the blade whereby said disposable cushioning device protects the upper teeth of a patient undergoing an endotracheal intubation.

4,583,528

EXAMINING DEVICE WITH IMPROVED OPTICAL COUPLING BETWEEN THE LIGHT SOURCE AND LIGHT CONDUCTOR

Jack Bauman, 1677 San Onofre Dr., Pacific Palisades, Calif. 90272

Filed Nov. 8, 1984, Ser. No. 669,474
Int. Cl.[4] A61B *1/06*; F41M *3/04*
U.S. Cl. 128—11 **11 Claims**



1. In an examining or viewing device having a light source and a light conductor to conduct light away from the light source to a field of view, the improvement in the optical coupling of the light source to the light conductor comprising, a reflector associated with the light source which is shaped to reflect light from the light source into a converging, conically shaped light beam and the light conductor having a light receiving face which is positioned sufficiently close to the point of convergence of the conically shaped light beam to receive essentially all of the light beam.

4,583,529

HIGH EFFICIENCY HIGH FREQUENCY POWER OSCILLATOR

James B. Briggs, La Canada, Calif., assignor to Mettler Electronics Corporation, Anaheim, Calif.

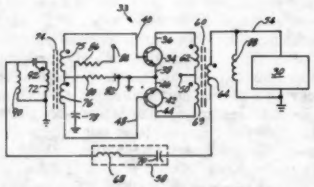
Filed May 23, 1983, Ser. No. 496,838
Int. Cl.[4] A61H *23/00, 23/02*; H03F *3/26*
U.S. Cl. 128—24 A **30 Claims**

1. A high frequency, high mechanical energy output apparatus comprising:

a transducer having a fundamental frequency of oscillatory movement;

a driving circuit for driving the transducer comprising first and second active devices, each having an output circuit and a control circuit, the active devices being cooperatively connected together and responsive to control signals at the control circuits for producing an alternating output;

means for coupling the alternating output from the output circuits of the active devices to the transducer and adapted for applying the alternating output as an alternating series current signal serially through the transducer;



a filter circuit coupled together in series circuit relation with the transducer and operative for filtering, from the alternating series current signal, substantially all harmonics of the fundamental frequency of oscillation of the transducer to produce a filtered series current signal; and

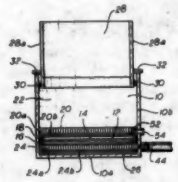
means for coupling the filtered series current signal to the control circuits of the active devices for controlling respective ones of the first and second active devices and thereby cause the active devices to cooperatively enable said alternating output to be formed with a frequency substantially at the fundamental frequency.

4,583,530

FLUIDIZED BED APPARATUS FOR TREATING EQUINE BODY PARTS

Ernest J. Henley, 358 Westminister, Houston, Tex. 77024

Filed May 1, 1984, Ser. No. 605,823
Int. Cl.[4] A61H *9/00*
U.S. Cl. 128—65 **5 Claims**



1. An apparatus for applying massage and heat to parts of an equine body comprising:

a flexible container having a bottom and side walls of sufficient dimensions to contain two equine legs;

means for varying the depth of said container;

a horizontal perforated plate spanning the perimeter of said container with support means comprising a grating extending from the underside of said plate to said bottom wall of said container;

a bed of particulate material capable of fluidization in gas enclosed by said side walls of said container and supported by said plate;

means for distributing gas flow into said bed;

means for heating a gas;

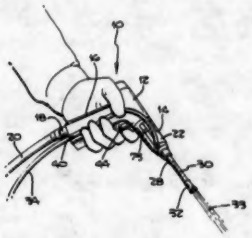
means of moving a gas through said distribution means and said bed; and

means for protecting said distribution means from equine hooves.

4,583,531
HAND-HELD PULSATING JET LAVAGE

Terry M. Mattchen, 15254 Knapp St., Sepulveda, Calif. 91343, assignor to Terry M. Mattchen, Van Nuys, Calif.

Filed Mar. 2, 1984, Ser. No. 585,568
Int. Cl.[4] A61H 9/00
U.S. Cl. 128—66 41 Claims



1. A hand-held pulsating jet lavage driven by a source of pressurized fluid for delivering discrete fluid, pulses with sharp turn on and cut off interfaces, (to deliver a pulsed fluid) from a second source, comprising:

hand-held housing means for receiving said pressurized fluid from said second source;

motor means mounted within said hand-held housing means driven by said pressurized fluid;

said hand-held housing having a chamber therein;

reciprocating means driven by said motor means, the reciprocating means extending into said chamber for reciprocation along a selected axis;

disposable pump cartridge means connected to said second source;

said chamber having closure means, the opening of which permits reception of said disposable pump cartridge means; and

means for engaging said disposable pump cartridge means and said reciprocating means for moving the pulsed fluid generally parallel to the selected axis in response to reciprocation of the reciprocating means, whereby said fluid from said second source is isolated from said hand-held housing means and said pressurized fluid.

4,583,532
BACK TRACTION DEVICE

J. Paul Jones, R.D. 1 Box 171-L, Glenmoore, Pa. 19343

Filed Oct. 15, 1984, Ser. No. 660,880
Int. Cl.[4] A61H 1/02
U.S. Cl. 128—75 1 Claim

1. A portable back traction machine for use by humans, the machine comprising:

a carriage;

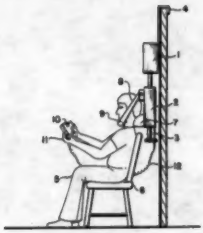
a drive unit having means for mounting the unit on a vertical member and means connected with said carriage to move the carriage up and down in a vertical direction;

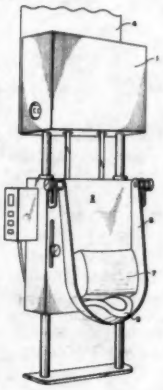
a back-of-the-neck pad mounted adjacent the lower end of the carriage, the pad being contoured to fit with the back of the neck of the patient being treated;

a U-shaped chin strap pivotally mounted adjacent the top of the carriage, the pivotal motion permitting the lower end of the chin strap to swivel toward and away from said back-of-the-neck pad;

chin pad means on the lower end of the chin strap contoured to engage around the chin of the person being treated;

said pivoting motion providing for the back of the neck of a patient to be engaged with said back-of-the-neck pad and the chin of the person to be engaged with said chin strap pad means with the chin strap being oriented at an angle to the vertical motion of the carriage whereby upward motion of the carriage causes the pads to respectively grip the chin and back of the neck and pull the person's head in an upward direction;





and said pivoting motion of said chin strap providing for quick release of the person's head by the person moving his head straight upward and flipping the chin strap away.

4,583,533
ORTHOPEDIC LUMBAR APPARATUS

Paul H. Goodley, 349 S. Lafayette Pl., Apt. #328, Los Angeles, Calif. 90057, and Alexander M. Shemet, #2 Empty Saddle Rd., Rolling Hills Estates, Calif. 90274

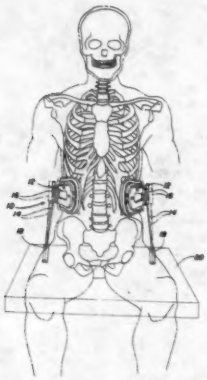
Filed Nov. 8, 1983, Ser. No. 549,995
Int. Cl.[4] A61H 1/02
U.S. Cl. 128—75 8 Claims

1. A spinal compression relieving and stretching apparatus comprising:

a first and a second corselet, each contoured generally to fit on the sides of the lower torso of the wearer of the apparatus; and

a first and a second strut, each pivotally attached to a respective one of the corselets, and extending in the direction of the hips of the wearer, each of a sufficient length to extend to contact a surface upon which the wearer is sitting when the wearer is in, the sitting position, and to exert a sus-

pending force on the corselets at generally the lower rib cage of the wearer



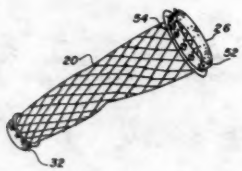
the pivotal attachment of the struts to the corselets permitting rotation of the torso by forward and backward rocking motion by the wearer.

4,583,534

COLLAPSIBLE CHAIN MAIL STRUCTURE

John T. Woods, and Margaret H. Woods, both of 811 Loma Vista Pl., Santa Paula, Calif. 93060

Filed May 28, 1985, Ser. No. 738,243
Int. Cl.[4] A61F *3/00, 5/04;* **A41C** *1/00*
U.S. Cl. 128—80 R **7 Claims**



1. A collapsible chain mail structure comprising:

(a) a plurality of articulated hollow X-sections of varying size, positioned with each end contiguous with another forming a circular sleeve;

(b) a first ring body having an outwardly extending flange containing a plurality of holes spaced co-equal to the ends of said X-sections mating thereupon;

(c) a second ring body having an outwardly extending flange containing a plurality of holes spaced co-equal to the ends of said X-sections mating thereupon;

(d) a plurality of interconnecting stranded ropes threaded through each extremity of said X-section crossing in the center and penetrating the appropriate holes in said first ring body on one end and matching holes in said second ring body on the other end forming an interconnected collapsible structure; and,

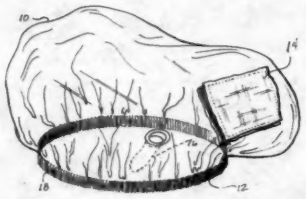
(e) multiple tightening means tensioning said plurality of stranded ropes on said first ring body in such a manner as to tension all of the ropes simultaneously tying the X-sections together structurally forming a rigid enclosure between said first and second ring for containing a body member therewithin.

4,583,535

PROTECTION MASK

John J. Saffo, 88 Chalet Ct., Lake St. Louis, Mo. 63367

Filed Aug. 7, 1980, Ser. No. 176,196
Int. Cl.[4] A62B *7/00*
U.S. Cl. 128—201.25 **5 Claims**



1. A protection mask comprising a flexible hood having an inside surface and an outside surface, a head opening for placing said hood over the head of a wearer, said hood being made of transparent plastic for allowing the wearer to see through the hood, said transparent plastic having at least one fire retardant additive incorporated therein, an elastic band for gathering the head opening of said hood around the neck of the wearer, said hood having an inhale opening located in the vicinity of the mouth of the wearer, filtering means covering said inhale opening for filtering air entering through said opening wherein said filtering means comprises at least one gauze pad sewn over the outside of said inhale opening of said hood and another gauze pad sewn on the inside of said hood over said inhale opening, said filtering means including charcoal positioned between said gauze pads, and check valve means through said hood which opens to allow air to exit from said hood when the wearer exhales and which closes when the wearer inhales outside air through said inhale opening and through said filtering means, wherein said check valve means is located on one side of said bond spaced from said inhalation opening and comprises an elongate tube extending through said hood, said elongated tube having a base portion defined by an annular flange projecting radially outwardly from said tube and being attached on the inside surface of said hood, said base portion being adapted to prevent said tube from being pulled through said hood, said tube projecting from said base portion, through said hood, outside of said mask and into a readily expandible and collapsible sleeve formed of a flexible plastic film, said sleeve having an end portion which terminates in a free end remote from said tube and which progressively decreases in cross-section in a direction extending toward said free end, said end portion having at least one opening which allows air to exit from said hood through said tube and sleeve when the wearer exhales and which closes to block passage of air through said tube when the wearer inhales, said opening being elongated at least in the general direction of the longitudinal axis of said sleeve.

4,583,536

BREATHING APPARATUS FOR UNDERWATER SWIMMING OR DIVING

Rong J. Jan, No. 81-4, Jen-Yi Street, Feng Shan City, Kaohsiung Hsien, Taiwan

Filed Jul. 10, 1984, Ser. No. 629,552
Int. Cl.[4] B63C *11/16*
U.S. Cl. 128—201.11 **1 Claim**

1. A breathing apparatus comprising:

a ventilating pipe formed with a cylindrical chamber, an air passage having an upper end communicating with an upper end of said cylindrical chamber, said pipe further including a plurality of holes extending through the ventilating pipe and communicating directly with said cylindrical chamber;

a buoyancy block disposed in said cylindrical chamber;

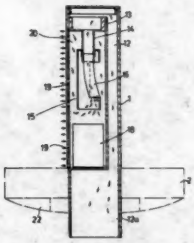
a plug force-fitted within the upper end of said cylindrical

chamber, said plug having a center hole allowing communication between said chamber and passage;

a sleeve force-fitted within the center hole of said plug;

a rubber tubing connected at one end thereof with the lower end of said sleeve;

a movable member slidably fitted at an upper end thereto to said sleeve and at a lower end thereof being connected with the lower end of said rubber tubing, said rubber tubing permitting communication between said ventilation holes and air passage and being bendable to block



communication when said movable member moves upwards along said sleeve;

a cap threadedly engaging the top of said ventilating pipe;

a float body on which is mounted said ventilating pipe, said float body being provided with a weight on the bottom thereof;

a hose attached to said ventilating pipe at one end thereof; and

a mouthpiece attached to the other end of said hose, air being provided to the mouthpiece through the hose and air passage in the ventilating pipe.

4,583,537

CONVERGENT MULTIBEAM UNIT FOR RADIATION

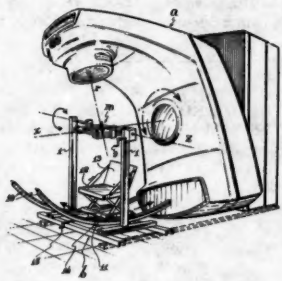
Victor E. Derechinsky, and Osvaldo O. Betti, both of Sarmiento 2172, Buenos Aires, Argentina (1044)

Filed Nov. 12, 1982, Ser. No. 441,595

Claims priority, application Argentina, Nov. 18, 1981, 287500

Int. Cl.[4] A61B *6/00*

U.S. Cl. 128—303 B **11 Claims**



1. A radiation treatment apparatus comprising radiation means for directing treatment radiation along a first axis, said radiation means being mounted for rotation about a second axis which intersects said first axis at an isocenter whereby said radiation passes through said isocenter for all orientations of said radiation means about said second axis, and stereotaxic means for holding an object to be treated, said stereotaxic means comprising seat means for supporting the weight of an object and frame means closely adjacent said isocenter, said frame means being mounted for movement in three orthogonal directions and for rotation about a third axis which intersects said first and second axes at said isocenter, said seat means also being mounted for rotation about said third axis, whereby said radiation will irradiate the portion of said object at said isocenter for any orientation of said stereotaxic means about said third axis.

4,583,538

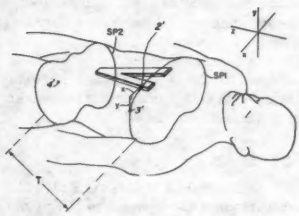
METHOD AND APPARATUS FOR STEREOTAXIC PLACEMENT OF PROBES IN THE BODY UTILIZING CT SCANNER LOCALIZATION

Gary M. Onik, 1129 Judah, San Francisco, Calif. 94122; Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178, and Trent H. Wells, 8151 San Carlos Ave., So. Gate, Calif. 90280

Filed May 4, 1984, Ser. No. 607,175

Int. Cl.[4] A61B *19/00*

U.S. Cl. 128—303 B **12 Claims**



8. A method for determining a target point within a human body by means of tomographic cut images from a tomographic scanner comprising the steps of:

(a) placing a localizer in a fixed position relative to the body and with at least a portion of said localizer being adjacent to the skin of the body such that a tomographic scan cut through said localizer will give a first image point location on the scan image which determines a first physical point on the patient's skin adjacent to said localizer;

(b) taking at least one tomographic cut through the body and through said localizer from which said first physical point on the skin can be determined and from which a second image point on the skin can be determined on the image of said at least one tomographic cut, whereby the coordinate differences between said first image point and said second image point enable the unique position of the associated second physical point on the patient's skin to be determined;

(c) identifying a target image point on the image of said at least one tomographic cut and from which the coordinate position of the associated physical target point in the body can be determined relative to said second phusical point seen in said at least one tomographic cut; and,

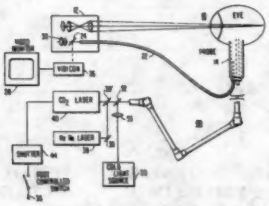
(d) calculating a trajectory in space relative to the plane of said at least one tomographic cut which passes through said second physical point on the skin and through said physical target point and calculating the distance along said trajectory between said physical point and said physical target point.

4,583,539

LASER SURGICAL SYSTEM

David B. Karlin, New York, N.Y.; Chandra K. N. Patel, Summit, N.J.; Obert R. Wood, II, New York, N.Y.; Thomas J. Bridges, Holmdel, N.J., and Albert R. Strnad, Colts Neck, N.J., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y. and Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Jan. 12, 1982, Ser. No. 338,926
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 25 Claims



1. A surgical instrument for treating biological tissue comprising:

a CO_2 laser power source producing a single mode laser beam;

an articulated arm coupled to said CO_2 laser source comprising a series of coupled rigid straight hollow dielectric waveguides joined by elbow corner mirrors therein, said articulated arm transporting said single mode laser beam without mode conversion; and

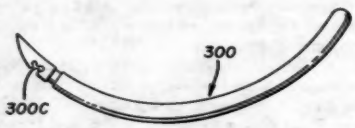
a probe coupled to said articulated arm receiving said single mode laser beam and directing said beam onto portions of biological tissue to be treated.

4,583,540

HAIR REPLACEMENT APPARATUS

Oscar Malmin, Akron, Ohio, assignor to Hills Family Preservation Trust, Boise, Id.

Continuation-in-part of Ser. No. 935,521, Aug. 21, 1978, Pat. No. 4,346,713, which is a continuation-in-part of Ser. No. 867,482, Feb. 9, 1978, abandoned, which is a continuation-in-part of Ser. No. 855,272, Nov. 28, 1977, abandoned. This application Mar. 30, 1981, Ser. No. 249,331
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—330 3 Claims



3. A penetrating instrument for emplacing strands of replacement hair in the head of a human being comprising:

(A) an elongate, generally cylindrical shank having first and second ends;

(B) said first end having a conical configuration terminating in a sharp point;

(C) said shank having at least one recessed strand receiving notch disposed between said first and second ends for releasably engaging the strands;

(D) said shank being bowed intermediate, said first and second ends to form concave and convex surfaces;

(E) said strand receiving notch being disposed on said convex surface; and

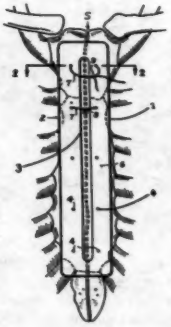
(F) said shank having a recessed annular groove disposed adjacent said strand receiving notch and between said strand receiving notch and said second end.

4,583,541

STERNAL STABILIZATION DEVICE

Joseph P. Barry, 5112 N. Byron Ave., Oklahoma City, Okla. 73112

Filed May 7, 1984, Ser. No. 607,639
Int. Cl.[4] A61B *17/08*
U.S. Cl. 128—335 3 Claims



1. A stabilizer for holding a severed sternum closed, comprising:

an elongated rigid generally strap-like member having a generally flat back surface for longitudinally overlying the anterior surface of a severed sternum in transverse spanning relation,

said member having a forward surface and having a recess therein intermediate its length and substantially medially its width,

said member having longitudinally and transversely spaced-apart pairs of holes respectively extending through its front and back surfaces on opposing sides of the recess; and,

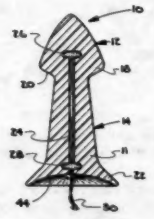
a plurality of wires each to be extended intermediate its ends transversely across the sternum posterior and project at its respective end portions through a respective pair of said pairs of holes for tying or twisting the respective wire end portions together adjacent the front surface of said member.

4,583,542

HEMORRHOIDAL PESSARY

Zane R. Boyd, 120 S. Maize Rd. #12, Wichita, Kans.

Filed Oct. 11, 1984, Ser. No. 659,766
Int. Cl.[4] A61M *29/00*
U.S. Cl. 128—341 10 Claims



1. A hemorrhoidal device insertable in the rectum and held in place by the sphincter muscles comprising:

a body of molded soft pliable material including a head and shaft portion;

the head portion having a tapered nose and a corona portion with a circumferential shoulder at the juncture between the head portion and the shaft portion;

the shaft portion being-tapered outward from the head, and the end of the shaft portion terminates in an annular outwardly extending flange;

a longitudinal stiffener member concentrically positioned within the body of the device and extending longitudinally from the head to approximately the end of the shaft portion; and

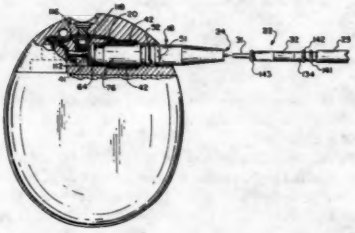
removal means attached to the device for removal of the device.

4,583,543

UPSIZING ADAPTER

Charles A. Peers-Trevarton, Coral Springs, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed May 4, 1983, Ser. No. 491,608
Int. Cl.[4] A61N *1/00*
U.S. Cl. 128—419 P **22 Claims**



1. An upsizing adapter for electrically and mechanically coupling (a) a small size terminal electrode assembly having at least one ring electrode and a pin electrode and being of the type which is mounted on the end of a pacing lead to (b) a large size terminal electrode assembly socket in a pacer having at least first and second electrical contact means therein for making contact with a large size terminal electrode assembly having a ring electrode and a pin electrode, said adapter comprising: first electrical coupling means for electrically coupling a ring electrode of a small size terminal electrode assembly with said first electrical contact means in a large size terminal electrode assembly socket in a pacer and, second electrical coupling means for electrically coupling a terminal pin electrode of a small size terminal electrode assembly with said second electrical contact means in the terminal electrode assembly socket.

4,583,544

SPORTS BRA

Cherrie Flanagan, Boulder, and Arnold I. Gilbert, Eagle-Vail, both of Colo., assignors to Gilbert Apparel Group, Inc., Eagle, Colo.

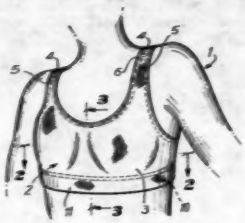
Filed Oct. 3, 1985, Ser. No. 783,358
Int. Cl.[4] A41C *3/02*; A41D *5/00*
U.S. Cl. 128—482 **8 Claims**

1. A sports brassiere comprising:

a. a continuous front panel;

b. a continuous rear panel which is a continuation of said front panel, said rear panel having a height of at least 60% of the height of the front panel;

c. shoulder straps connecting said front panel and said rear panel, said shoulder straps being a continuation of the material of said front and rear panels; and



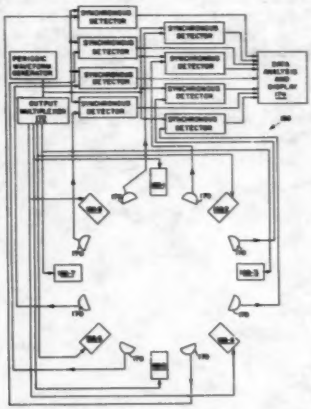
d. an elastic band attached to the bottom of said front and rear panels and extending continuously around said brassiere.

4,583,545

NONINVASIVE BIOMAGNESONIC METHOD OF BIOCURRENT MEASUREMENT

Bruce C. Towe, 2331 S. Paseo Loma Cir., Mesa, Ariz. 85202

Filed Jul. 3, 1984, Ser. No. 627,597
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—630 **23 Claims**



1. A noninvasive method of detecting biocurrents in an organism, comprising the steps of:

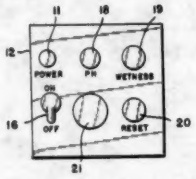
a. applying a magnetic field to the organism; such that a biocurrent flowing in the organism interacts with the applied magnetic field to generate a force in the tissue of the organism at the location of the biocurrent in a direction orthogonal to the applied magnetic field and the biocurrent, thereby producing an acoustic response in the tissue;

b. detecting any acoustic response by placing at least one acoustic transducer detector in proximity to the organism, whereby the detected acoustic response corresponds to the biocurrent.

4,583,546
BLOOD LOSS MONITOR

Patria P. Garde, 61 Laurel La., Hammonton, N.J. 08037

Filed Nov. 18, 1983, Ser. No. 553,291
Int. Cl.[4] A61F *13/16*
U.S. Cl. 128—638 17 Claims

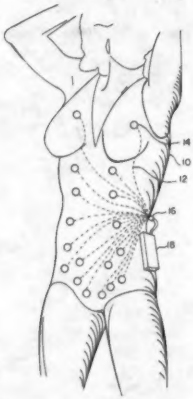


1. A monitor of blood loss from a patient comprising the combination of a pad having a means for detecting blood presence and means for detecting wetness which indicates wetness from blood and non-blood fluids, and means associated with said pad for indicating the presence of blood and wetness from said detecting means, and providing an electrical signal for each indication, whereby the activation of all signals indicates profuse blood loss.

4,583,547
GARMENT APPARATUS FOR DELIVERING OR RECEIVING ELECTRIC IMPULSES

Herman Granek, Miami Beach; Murry Granek, and John Church, both of Miami, all of Fla., assignors to Bio-Stimu Trend Corp., Opa Locka, Fla.

Continuation-in-part of Ser. No. 499,866, Jun. 1, 1983. This application Jul. 27, 1983, Ser. No. 517,810
Int. Cl.[4] A61B *5/04;* A61N *1/04*
U.S. Cl. 128—639 15 Claims



1. An electrode assembly for delivering or receiving electric impulses to or from the skin of a living body comprising:

a non-electrically conducting web material having small interstices;

a thin member secured peripherally to said web material in confronting relationship whereby a space is defined between said member and said web material;

an electrode element located in said space;

electrically conducting means for connecting the electrode element to a source of electrical energy or to a monitoring instrument;

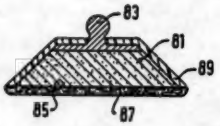
a frangible capsule containing electrolytic fluid-like material located in said space;

said small interstices of said web material being sufficiently large to permit the said fluid-like material to penetrate therethrough when said frangible capsule is ruptured whereby the skin of a patient is wetted by said fluid-like material when said electrode assembly is used to thereby complete the electrical connection between said electrode element and the skin of the patient.

4,583,548
BIOELECTRIC ELECTRODE-ARRANGEMENT

Walter Schmid, Pfaffenhofen, Fed. Rep. of Germany, assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Mar. 28, 1984, Ser. No. 594,202
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—639 7 Claims



1. A bioelectric electrode assembly comprising an electrode piece and an ionically conductive contact electrolyte layer as a coating on said electrode piece,

said electrode piece comprising an electrically conductive material selected from the group consisting of electrically conductive carbon black, electrically conductive graphite, and mixtures thereof, and triiodomethane blended therewith,

said ionically conductive contact electrolyte layer being in electrically conductive contact with said electrode piece an adapted for placing onto the skin to establish electrically conductive contact therewith,

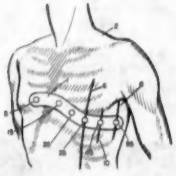
an iodine ion forming substance distributed throughout said contact electrolyte layer,

said iodien ion forming substance being an iodide salt selected from the goup consisting of zinc iodine, silver iodide, copper iodide, potassium iodide, calcium iodide, and mixtures thereof.

4,583,549
ECG ELECTRODE PAD

Samir Manoli, 4944 Vista Grande, El Paso, Tex. 79922

Filed May 30, 1984, Ser. No. 615,247
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—640 4 Claims



1. A precordial ECG electrode pad comprising:

(a) a flexible nonconductive body having a fixed precordial configuration;

(b) six conductive discs plated on said flexible nonconductive body and etched to a predetermined pattern effective

for precordial ECG disc placement, two of said six discs having fixed locations for equidistant placement on opposite sides of a patient's sternum;

(c) the four remaining ECG discs fixedly positioned on said flexible nonconductive body at predetermined locations relative to said two discs for anatomically correct placement for sensing precordial ECG signals from said patient's body at locations corresponding to a first location at a fifth intercostal space along the mid-clavicular line, to a second location about mid-way between said first location and an adjacent one of said two discs, to a third location on an anterior axillary line; and to a fourth location on a mid-axillary line, said first, third, and fourth locations generally defining a horizontal plane; and

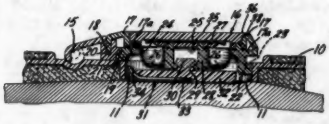
(d) conductor means on said nonconductive body for separately connecting each of said discs to ECG recording or monitoring means.

4,583,550

ACCESS WINDOW ASSEMBLY FOR A BODY CAST

Anthony P. Montalbano, Glen Cove, and David E. Conroy, City Island, both of N.Y., assignors to Biolectron, Inc., Hackensack, N.J.

Filed May 7, 1984, Ser. No. 607,463
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—644 **2 Claims**



1. An access window assembly for mounting in a body cast comprising

a band having end members and side members for incorporation in a body cast,

means forming a shallow, generally circular opening intermediate the ends of said band providing an access window therein,

a cap member for said access window comprising ring means coaxial therewith and mounted for limited rotation in opposite directions thereover,

cooperating means on said band and on said ring means effective to lock said ring means to the under side of said band upon rotation of said ring means in one direction and to unlock said ring means and said band upon rotation of said ring means in the opposite direction,

means mounting a flexible diaphragm in said ring means near the upper end thereof,

means securing an electrode releasably to said diaphragm in said access window,

a snap-in cover snugly fitted in the upper end of said ring means and closing the upper end of the opening therein, and

spacer means interposed between said cover and said diaphragm for adjusting the position of said electrode to a desired level in said access window.

4,583,551

MULTIPOLAR MEDICAL ELECTRODE

Harold Pike, 3747 S. Inca St., Englewood, Colo. 80110

Filed Nov. 19, 1984, Ser. No. 672,614
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—640 **17 Claims**

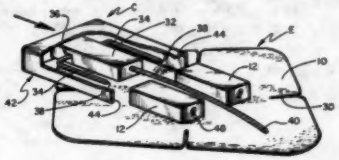
1. A multipolar medical electrode, attachable to the skin of a patient, for deriving electrical signals associated with physiological activity, said electrode comprising:

a thin, flat, flexible pad of nonconductive material having opposite surfaces with an adhesive on one of said surfaces;

a plurality of spaced well members extending from the other surface of said pad, each well member forming a cavity;

an electrolytic gel in said cavity;

a release backing covering said adhesive surface and enclosing the electrolytic gel within said cavities and being removable for attaching said pad to the skin of the patient by pressing



the adhesive on said one surface against the skin to bring the gel in each of said cavities into electrical contact with the skin at spaced locations;

a puncturable membrane on each of said well members; and

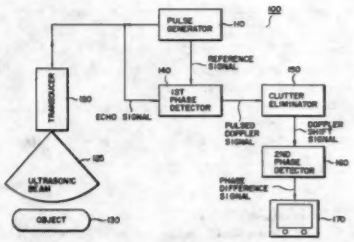
an electrical connector having a plurality of spaced conductive prongs for respectively puncturing each said membrane to make intimate contact with said electrolytic gel to transmit differential electrical signals to an electrical potential measuring instrument.

4,583,552

APPARATUS FOR OBSERVING BLOOD FLOW PATTERNS

Kazuhiro Iinuma, Tochigi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 21, 1984, Ser. No. 642,651
Claims priority, application Japan, Aug. 25, 1983, 58-156193
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—663 **8 Claims**



1. An apparatus for imaging a blood flow of an object, comprising:

ultrasonic transducer means for transmitting an ultrasonic interrogation pulse having a reference frequency in a beam toward said object and receiving echo signals reflected from said object and converting them into echo output signals;

scanning means for scanning said beam in the plane of said object;

first phase detecting means for producing a first plurality of phase detecting signals representative of phase differences between said echo output signals and said reference frequency;

second phase detecting means for dividing said first plurality of phase detecting signals into a plurality of sample signals representing sample volumes along said beam, and generating a second plurality of phase detecting signals repre-

sentative of phase differences between sample signals for adjacent ones of said sample volumes; and

displaying means for displaying said second plurality of phase detecting signals along said beam to provide an indication of blood flow in said object.

4,583,553

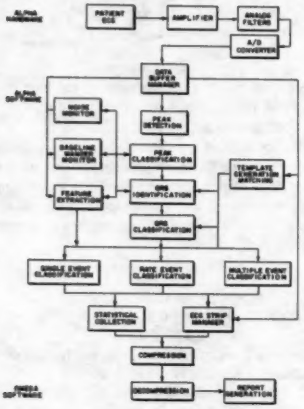
AMBULATORY ECG ANALYZER AND RECORDER

Atul P. Shah, Palm Bay; James L. Reuss, Melbourne Beach; Toni Guckert, W. Melbourne, and Jeffrey J. Clesius, Palm Bay, all of Fla., assignors to Medicomp, Inc., Melbourne, Fla.

Filed Nov. 15, 1983, Ser. No. 551,829

Int. Cl.[4] A61B *5/04*

U.S. Cl. 128—704 **20 Claims**



1. A cardiac analyzer comprising:

first and second input means for receiving input signals from separate sources;

means for detecting peaks in the input signals of both input means;

means for classifying detected peaks for both input means;

means for providing classification pairs, one from each input means at a corresponding time;

means for analyzing said detected peak pairs and said peak pair classification; and

means for identifying which peaks are QRS complexes.

4,583,554

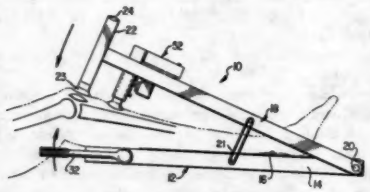
KNEE LIGAMENT TESTING DEVICE

Jonathan S. Mittelman, Albuquerque, and John S. Romine, Farmington, both of N. Mex., assignors to Medpar II, Albuquerque, N. Mex.

Filed Jun. 12, 1984, Ser. No. 619,799

Int. Cl.[4] A61B *6/00*

U.S. Cl. 128—774 **10 Claims**



1. An apparatus for measuring the relative displacement of the tibia and femur upon application of a force by operator, comprising:

a force application arm defining a rigid surface for contacting the lower leg for application of force on the tibia;

a reference arm pivotally hinged to said force application arm and defining a rigid surface for contacting the upper leg for application of a force on the femur to counter the force applied to the tibia through the force application arm;

means for limiting the force applied to the tibia to a predetermined maximum force to provide reproducibility of displacement measurement and to prevent application of excessive force;

a displacement sensor mounted on said reference armhaving an element mounted for movement relative to said reference arm along an axis generally parallel the direction of the displacement of the tibia relative to the femur, one end of the element positioned so as to contact the lower leg in a fixed relation with the tibia at the level of the tibial tubercle; and

means for measuring the displacement between the reference arm and the element when the force is applied, the displacement corresponding to the displacement between the femur and tibia.

4,583,555

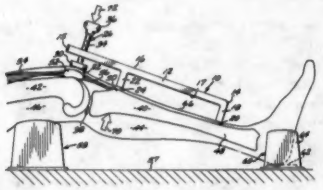
KNEE LIGAMENT TESTING SYSTEM

Lawrence L. Malcom, San Diego; Dale M. Daniel, La Mesa; Conny M. Jamison, San Diego, and Robert E. Landesman, Encinitas, all of Calif., assignors to Medmetric Corporation, San Diego, Calif.

Filed Jan. 3, 1983, Ser. No. 455,248

Int. Cl.[4] A61B *5/10*

U.S. Cl. 128—782 **18 Claims**



1. A method of testing a cruciate knee ligament which comprises the steps of:

making a determination of first locations relative to each other, in the general anterior/posterior direction, of the tibial tubrical and patellar bone structures adjacent the knee joint of a leg by engaging first and second locating members directly against the anterior surface of the leg in registry with the tibial tubrical and patellar bone structures, respectively, and making a first comparison of the relative positions of said locating members in the general anterior/posterior direction;

while maintaining said engagement of said locating members against said leg, applying a force to the proximal tibia of said leg in the general anterior/posterior direction, with said patellar bone structure being restrained against movement, so as to relatively displace said bone structures from their said first relative locations to second locations relative to each other in the general anterior/posterior direction which will cause a corresponding relative displacement between said locating members; and

while said force is being applied making a determination of said second relative locations of said bone structures by making a second comparison of the relative positions of said locating members in the general anterior/posterior direction;

the difference between said second and first comparisons of the

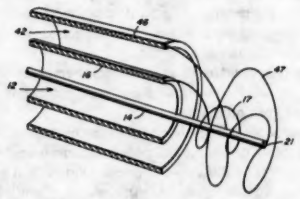
relative positions of said locating members indicating the amount of tibia/femur drawer shift at said knee joint.

4,583,556

MICROWAVE APPLICATOR/RECEIVER APPARATUS

Marion E. Hines; Robert J. Bielawa, and Robert O. Geoffroy, all of Middlesex County, Mass., assignors to M/A-Com, Inc., Burlington, Mass.

Filed Dec. 13, 1982, Ser. No. 449,389
Int. Cl.[4] A61N *1/40*
U.S. Cl. 128—804 7 Claims



1. For use in medical treatment of living tissue a microwave applicator/receiver device capable of applying microwave-frequency radiant energy to living tissue by way of insertion thereof through an opening into the body and of receiving similar energy radiating from within such tissue while in contact with said tissue, said device comprising an inner electrical conductor and an outer electrical conductor substantially shielding said inner conductor in a non-resonant transmission line configuration capable of propagating microwave energy in a frequency band suitable for heating living tissue, said inner conductor having an unshielded portion extending a distance beyond said outer conductor, and a helical coil surrounding said extending portion of said inner conductor and including first and second means connected between the ends of said outer and inner conductors respectively, for providing a traveling wave pattern of microwave radiation into tissue which pattern is characterized by substantially uniform intensity distribution over a prescribed spatial distribution within said tissue thus providing uniform heating absent hot-spots over the length of said helical coil, said first means providing a conductive connection from the outer conductor to the helical coil, said second means comprising a substantially radial conductor interconnecting the helical coil with the inner conductor extending portion with an absence of any conductor extending axially substantially beyond said helical coil, said helical coil having multiple wire turns each separated from the next by an inter-turn spacing greater than the diameter of the helical conductor wire, the axial length of said helical coil being substantially greater than the diameter of the helical coil, and including a substantially smooth dielectric sleeve covering at least said helical coil.

4,583,557

METHOD AND MACHINE FOR THE SIMULTANEOUS MANUFACTURE OF TWO CONTINUOUS STREAMS OF CIGARETTES

Riccardo Mattei, Bologna, and Bruno Belvederi, S. Martino di Monte San Pietro, both of Italy, assignors to G.D Societa' per Azioni, Bologna, Italy

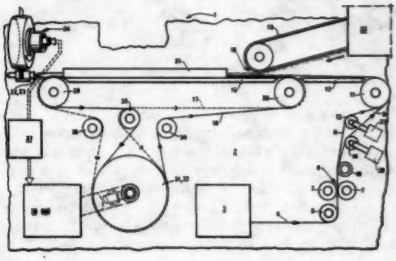
Filed May 7, 1984, Ser. No. 608,026
Claims priority, application Italy, May 27, 1983, 3440 A/83
Int. Cl.[4] A24C *5/18*
U.S. Cl. 131—84.1 16 Claims

1. Method for the simultaneous manufacture of two continuous streams of cigarettes (25, 26), characterized by the fact that it comprises the steps of:

feeding a strip of paper (4) to a first cutting device (6);

activating the said first cutting device (6) so as to cut the said strip of paper (4) longitudinally into first (8) and second (9) strips of paper essentially identical to each other;

feeding the said strips (8, 9), by means of respective first (16) and second (17) conveyor belts, through a loading station (18), where a respective stream of shredded tobacco is fed on to each said strip (8, 9), and along a top (15) where each said strip is wrapped around a respective stream of shredded tobacco to form a respective continuous cigarette rod; the said conveyor belts (16, 17) being provided with respective independent drive rollers (31, 32);



feeding the said two rods (22, 23) through a second cutting device (24) designed to cut the said rods (22, 23) crosswise so as to form the said two continuous streams of cigarettes (25, 26);

controlling continually, via measuring means (27, 28), either directly or indirectly, the tension on the said two strips (8, 9), and

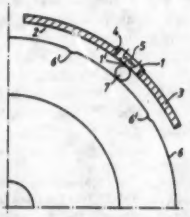
applying output signals from the said measuring means (27, 28) for controlling the surface speed of at least one of the said two drive rollers (31, 32) so as to maintain the tension on the said two strips (8, 9) constantly equal.

4,583,558

MARKING OF SMOKING ARTICLE WRAPPINGS

John A. Luke, Eastleigh, England, assignor to British-American Tobacco Company Limited, London, England

Filed Mar. 16, 1984, Ser. No. 590,203
Claims priority, application United Kingdom, Mar. 29, 1983, 8308531
Int. Cl.[4] A24C *5/60*
U.S. Cl. 131—284 9 Claims



1. A method of marking a smoking-article having an exterior wrapping consisting of, or incorporating, a substance which causes or undergoes a permanent change of colour under the application of heat, the method being characterized by bringing the article and a heated former means into contact with each other, the former means corresponding to the required marking, whereby heat applied through the former means to the article effects said colour change.

4,583,559

REORDERING OF TOBACCO

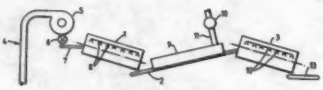
Roger W. Hedge, Lymington, England, assignor to British-American Tobacco Company Limited, London, England

Filed May 31, 1984, Ser. No. 615,886

Claims priority, application United Kingdom, Jun. 10, 1983, 8315988

Int. Cl.[4] A24B *3/04, 3/18*

U.S. Cl. 131—304 9 Claims



1. A method of reordering expanded tobacco, wherein tobacco, which as a result of having been subjected to an expansion process is hot and of low moisture content, is subjected to a first reordering step in which the water moisture content thereof is raised to a first moisture content value, and the tobacco is then cooled before being subjected to a further reordering step in which the moisture content thereof is raised to a value above said first moisture content value.

4,583,560

TOBACCO SMOKE FILTER

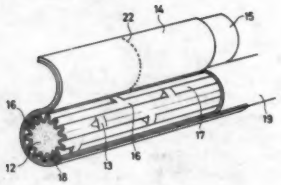
Takashi Sakai, Toyama; Kazuo Maeda; Masuo Kawabata, both of Kanagawa, and Mituo Kono, Tokyo, all of Japan, assignors to Mitsubishi Acetate Co., Ltd and Japan Tobacco Inc., both of Tokyo, Japan

Filed Jul. 7, 1983, Ser. No. 511,688

Claims priority, application Japan, Jul. 7, 1982, 57-116826

Int. Cl.[4] A24D *3/04;* B34C *5/00*

U.S. Cl. 131—336 21 Claims



1. A tobacco smoke filter, comprising; a core comprising a fibrous filter material wrapped with substantially one turn of a corrugated tape-like material, said tape-like material being further wrapped with air-permeable means, said air permeable means cooperating with said tape-like material to jointly define grooves extending in the axial direction of the filter, each groove having at least one blocking member positioned in the longitudinal direction of the filter in a manner such that the blocking member in one groove is staggered with respect to those in adjacent grooves.

4,583,561

HAIR TWINING APPARATUS

Ake L. Larsson, Palos Verdes Estates, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 13, 1983, Ser. No. 541,812

Int. Cl.[4] A45D *1/00*

U.S. Cl. 132—9 4 Claims

1. In a hair twining apparatus, the combination comprising:

a housing including a grippable hollow handle portion having a lower end and an upper end, an intermediate housing portion mounted to said upper end of said handle portion and an upper housing portion mounted to said intermediate housing portion, said upper housing portion having an open top;

a spring-biased trigger having a lower end and an upper end, said upper end being provided with an arcuate rack, said lower end being pivotally mounted to the lower end of said handle with said arcuate rack extending into said handle subjacent said intermediate housing portion;

a pinion gear member rotatably mounted in said intermediate housing portion, said pinion gear member including a pinion gear portion meshing with said arcuate rack for oscillation thereby when said trigger is actuated;

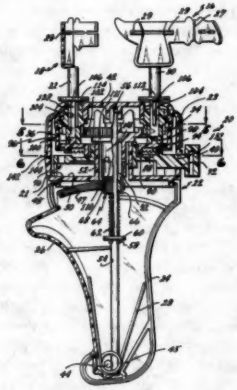
a sub-housing within said housing;

a drive gear member rotatably mounted in said sub-housing;

ratchet means for operably coupling said pinion gear member to said drive gear member;

first and second orbital gear members rotatably mounted within said sub-housing in meshing relation with said drive gear member;

first and second hair clamp means mounted on said sub-housing, each of said hair clamp means being mounted for concurrent rotation with one of said orbital gear members and being configured for gripping a plurality of hair filaments; and



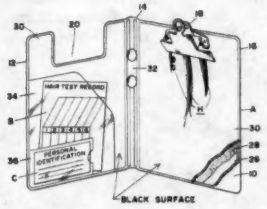
coupling means within said housing for selectively operating said hair twining apparatus in first and second positions, said coupling means in said first position locking said sub-housing relative to said housing and in said second position, said coupling means freeing said sub-housing for rotation, said ratchet means interconnecting said pinion gear member and said drive gear member and said orbital gear members along with said clamp means in a unidirectional manner with said coupling means in said first position during actuation of said trigger with the locking of said sub-housing to said housing restaining said sub-housing from rotation to thereby twist the hair filaments into strands, said coupling means including (a) a ring gear mounted on said sub-housing, (b) a carrier member having a sector gear means attached thereto for removably engaging said ring gear, (c) switch member means for activating said carrier member in order to selectively operate in said first and second positions and (d) ramp means within said housing configured for coaction with said carrier member to axially displace said carrier member on pivotal movement thereof in response to actuation of said switch member means, said switch member means being disposed above said handle portion for actuation by the thumb of an operator in order to enable one hand operation of said hair twining apparatus.

4,583,562

METHOD OF TESTING HAIR STRANDS USING KIT

Elliott B. Stewart, 8326 Main St., Kinsman, Ohio 44428

Filed Dec. 12, 1983, Ser. No. 560,929
Int. Cl.[4] A45D *40/00*; G09B *19/10*
U.S. Cl. 132—9 **4 Claims**



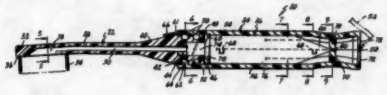
1. A method of testing multiple hair strands for coloring, color removing, bleaching, straightening and curling, testing the hair strands' condition before, during and after said tests including elasticity, porosity, strength, and texture of the hair strands, testing hair treatment products for use and compatability to the hair strands before treating the subject's full head of hair, said method utilizing a hinged two-piece rectangular clip board comprising an upper and a lower panel having dark colored surfaces on the inner sides and light colored surfaces on the opposite outer sides thereof, pockets of transparent material on the inner dark colored surface of the upper panel and a spring clip on the inner dark colored surface of the lower panel, a rectangular aperture in the upper panel commensurate in size and location to that of said clip enabling said upper panel to lie flatly in closed position against said lower panel such that said inner dark colored surfaces of each panel face each other, a pair of oppositely disposed spaced VELCRO pads secured in registrable relation to one another on said light colored surfaces, whereby said method comprises the steps of opening said clip board, securing said multiple hair strands in said clip on said dark colored surface of said lower panel, treating said multiple strands with chemical formulations of hair treatment products, leaving one of said hair strands untreated for comparison, and to facilitate inspection relocating said hair strands by flexing the free ends thereof onto said light colored surface of said upper panel while said hair strands are still secured in said clip and said panels are in said closed position.

4,583,563

COMBINED TOOTHBRUSH AND TOOTHPASTE DISPENSER

Burton S. Turner, 3438 W. Mott Ave., Flint, Mich. 48504

Filed Aug. 12, 1983, Ser. No. 522,786
Int. Cl.[4] A45D *44/18*
U.S. Cl. 132—84 R **19 Claims**



1. A combined toothbrush and toothpaste dispenser comprising

a brush having a neck with an internal passage extending therethrough, a head integral with one end of said neck with a plurality of bristles and with said passage having a first opening in said head among said bristles, and base means at the other end of said neck and including a second opening communicating with said passage,

a disposable toothpaste cartridge having a mouth removably received within said second opening and held therein against rotation with respect to said base means, a collapsible body with an end remote from said mouth, and toothpaste within said body, and

split hollow tubular means mounted to said base means for free rotation about said second opening and including tubular segments having opposed means projecting within said tubular means from respective ones of said segments and releasably clamping said end of said cartridge,

such that rotation of said tubular means with respect to said base means causes rotation of said mouth-remote end of said cartridge clamped between said clamping means with respect to said mouth to squeeze toothpaste through said mouth at said passage among said bristles.

4,583,564

DENTAL FLOSS

Paul Finkelstein, Princeton Junction, and Kevin G. Yost, Short Hills, both of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Jun. 27, 1985, Ser. No. 749,595
Int. Cl.[4] A61C *15/00*
U.S. Cl. 132—91 **7 Claims**

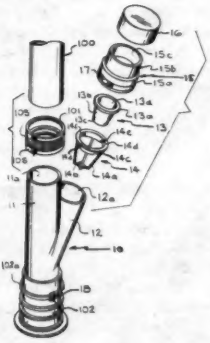
1. A dental floss comprising filaments containing a higher melting point core material and a lower melting point sheath material whereby the filaments are subjected to a temperature sufficient to achieve fiber to fiber fusion of the sheath material fibers.

4,583,565

FIRESTOP STACK FITTING AND COUPLING COMBINATION

Kenneth R. Cornwall, 902 Summit North, Atlanta, Ga. 30324

Filed Nov. 25, 1983, Ser. No. 555,121
Int. Cl.[4] E03D *1/00*
U.S. Cl. 137—1 **19 Claims**



1. A stack fitting which prevents spread of fire which comprises:

(a) a non-flammable, fluid carrying main conduit having a first longitudinal axis (a—a) between two opposed openings and adapted to be connected to vertically oriented fluid conduit plastic pipe between floors in a building;

(b) a non-flammable extension conduit from the main conduit positioned with a second axis at an acute angle (alpha) from the longitudinal axis of the main conduit with an opening;

(c) a non-flammable plug mounted in the extension conduit on a plastic support provided in the extension conduit which is releasable by melting upon exposure of the support to heat less than necessary for heat destruction of the plastic pipe to which it is adapted to be connected through

the main conduit from a fire in the building in which it is adapted to be oriented to thereby move the plug into and close the main conduit wherein the plastic support is provided by a harness with a strap upon which the plug rests, wherein the harness has two straps which are overlapping in an x pattern joined to a holding ring which is mounted in the extension conduit and wherein the strap is broken by heat from a fire to release the plug which moves by gravity into the main conduit; and

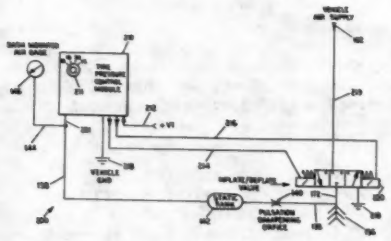
(d) closure means for the extension conduit opening.

4,583,566

PRESSURE CONTROL SYSTEM

Paul V. Kalavitz, 2658 Pohens, NW., Grand Rapids, Mich. 49504, and Ralph R. Griner, 345 Suffield, Birmingham, Mich. 48009

Filed Aug. 16, 1983, Ser. No. 523,704
Int. Cl.[4] B60C *23/00*
U.S. Cl. 137—101.19 18 Claims



1. In a pressure control system for regulating the actual fluid pressure in fluid-filled apparatus such as pneumatic devices and the like in accordance with an adjustable desired fluid pressure, wherein the system comprises a source of compressed fluid, means for selecting the desired fluid pressure, valve means connected to the apparatus and selectively connectable to the source of compressed fluid for selectively increasing, decreasing and maintaining the fluid pressure in the apparatus, and control means responsive to the actual fluid pressure and the selection of desired fluid pressure to operate the valve means in accordance with the difference between the actual and desired fluid pressure, the improvement wherein the control means comprises:

transducer means connected to the apparatus and responsive to the actual fluid pressure to generate an electrical transducer signal continuously proportional to the magnitude of the actual fluid pressure;

first circuit means connected to the means for selecting the desired fluid pressure and to the transducer means, and responsive to the transducer signal for generating electrical valve control signals representative of the polarity of the difference between the desired fluid pressure and the actual fluid pressure;

the valve means is responsive to the electrical valve control signal to continuously and selectively increase or decrease the actual fluid pressure in the apparatus until the actual fluid pressure is within a predetermined range of the desired fluid pressure; and

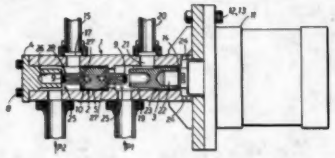
the first circuit means comprises proportional signal generating means connected to the transducer means and to the means for selecting the desired fluid pressure, and responsive to the transducer signal and the particular selected desired fluid pressure for generating a first difference signal having a value continuously proportional to the magnitude and polarity of the difference between the actual fluid pressure and the desired fluid pressure during increase and decrease of the actual air pressure.

4,583,567

VALVES

Ronnie A. Arav, Bolton, England, assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 27, 1983, Ser. No. 545,778
Claims priority, application United Kingdom, Oct. 30, 1982, 8230927
The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.
Int. Cl.[4] G05D *16/18*
U.S. Cl. 137—115 10 Claims



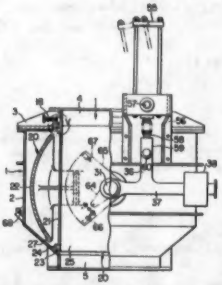
1. A valve for regulating and balancing the pressure in two fluid pressure systems comprising a valve body, a bore in the valve body, a balance piston received in the bore, opposite ends of the balance piston being subjected to the fluid pressure in the first and second fluid pressure systems, a relief line for the second pressure circuit the communication with which is controlled by the balance piston, a regulating piston received in the valve body and the regulating piston being subjected at one end to fluid pressure in the first pressure system, and a regulating pressure which acts on the regulating piston in opposition to the pressure in the first pressure system, a relief line for the first pressure system being controlled by the regulating piston, the regulating piston serving to establish a regulated pressure in the first pressure system, and the balance piston serving to balance the pressure in the second pressure system relative to that regulated in the first pressure system.

4,583,568

VALVE ASSEMBLY FOR POWDERY GRANULES

Takashi Yamakawa, Hirakata; Ikuhei Otani, Sakai, and Morio Akiyama, Izumi, all of Japan, assignors to Kurimoto, Ltd., Osaka, Japan

Filed Nov. 15, 1984, Ser. No. 671,659
Claims priority, application Japan, Nov. 21, 1983, 58-219138
Int. Cl.[4] B08B *3/04, 9/00;* F16K *25/02*
U.S. Cl. 137—240 11 Claims



1. A valve assembly for powdery granules comprising:

a valve housing having upper and lower walls formed with upper and lower openings;

a valve member having a hollow cylindrical valve body defining a passage for the powdery granules supplied from

said upper opening to said lower opening and rotatably supported within said valve housing; and

drive means, mounted to said valve housing, for turning said valve member through an angular range of about 90° so as to hold said valve member upright in the vertical direction,

wherein said valve housing has, at the peripheral edge of its upper opening, a tapered surface which is enlarged downwards; a circular groove is formed behind the tapered surface; an air charge/discharge member is connected to said circular groove; said circular groove communicates with the interior of said valve housing through a circular slit formed in said tapered surface; an elastic hollow seal ring is arranged in said circular groove, part of said elastic hollow seal ring being permitted to protrude into the interior of said valve housing through said circular slit; a stiffening ring is housed in the interior of said elastic hollow seal ring to stiffen said seal ring so as to hold said elastic hollow seal ring in said circular groove during the insertion of said seal ring into the valve assembly; means securable for holding said seal ring in said groove during used of the valve assembly; a plurality of air holes perforate through part of the peripheral surface of said seal ring on the opposite side to said circular slit; said stiffening ring being loosely confined and free floating in said hollow seal ring to allow free entry and exit of a pressurized fluid into and out of said hollow seal ring through said air holes; said valve body has, at the peripheral edge of one end opening, a tapered surface to be opposed to said tapered surface of said valve housing; and a dome-shaped closure member, directed substantially orthogonally to said passage, is mounted to the outer periphery of said valve body, said closure member having, at its outer peripheral edge, a tapered surface to be opposed to said tapered surface of said valve housing,

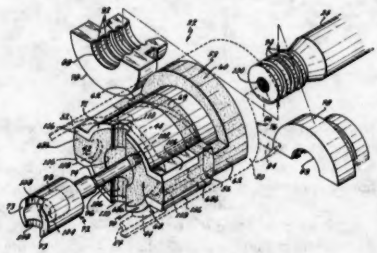
whereby in a full-open position where said tapered surface at the peripheral edge of one end opening of said valve member opposes said tapered surface of said valve housing or in a full-close position where said tapered surface of said closure member opposes said tapered surface of said valve housing, said pressurized fluid is supplied to the interior of said seal ring through said air holes from said air charge/discharge member to provide sealing between said valve housing and said valve member or between said valve housing and said closure member.

4,583,569

WIRELINE BLOWOUT PREVENTER

Arthur Ahlstone, 354 Agnus Dr., Ventura, Calif. 93003

Filed Jul. 8, 1985, Ser. No. 752,605
Int. Cl.[4] F16K *3/36*
U.S. Cl. 137—246.22 **29 Claims**



1. A wireline blowout preventer comprising:

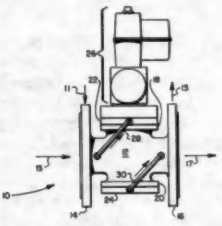
a valve body, a well bore extending through said valve body, a pair of axially aligned ram guides in said valve body intersecting said well bore, a ram in each said ram guide, means for moving said rams between an open spaced-apart position in which said rams are retracted into said ram guides and a closed position in which the rams are moved into the well bore for closing said well bore, each said ram including a ram body, an axial stem attached to said ram body and a seal insert removably mounted to said ram body, each seal insert having elastomeric seal means defining a forward seal face, a rigid cup set into said seal face and defining a cup cavity, said cups joining to define a chamber between said rams in said closed position, conduit means extending axially through one or both of said ram bodies and its corresponding stem and seal insert and opening into said cup for injecting a packing material into said chamber, said elastomeric seal means being compressed axially in said closed position, and extrusion guide means for directing flow of the compressed elastomer for making an inner seal surrounding said joined cups to seal said chamber.

4,583,570

LIQUID COOLED BALL VALVE

George B. Rabe, Sparta, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Oct. 15, 1984, Ser. No. 660,682
Int. Cl.[4] F16K *49/00*; F16L *7/00*
U.S. Cl. 137—340 **7 Claims**



1. A flow control assembly comprising:

a housing having a passage therethrough;

a rotatable ball valve in the passage in the housing, said ball valve having a passage therethrough for alignment with said passage in said housing in one position of said ball valve to permit fluid flow through said passage;

an annular channel is said ball valve extending around said passage in said ball valve;

an inlet sleeve positioned in one end of said passage in said housing and having a channel formed therein for receiving cooling fluid;

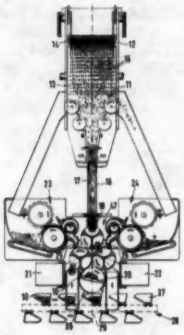
an outlet sleeve positioned in the other end of said passage in said housing and having a channel formed therein for receiving cooling fluid; and

means in said housing for connecting said channel in said inlet sleeve with said annular channel in said ball valve, and for connecting said annular channel in said ball valve with said channel in said outlet sleeve, to permit circulation of said cooling fluid through said housing and said ball valve.

4,583,571
APPARATUS FOR FORMING AND TRANSPORTING AWAY TOBACCO PORTIONS

Heinz Focke, and Oskar Balmer, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Mar. 30, 1984, Ser. No. 595,158
Claims priority, application Fed. Rep. of Germany, May 4, 1983, 3316176
Int. Cl.[4] B65B *1/04*
U.S. Cl. 141—83 13 Claims



1. An apparatus for forming portions of fibrous material, especially cut tobacco, and for transporting them away; said apparatus comprising:

a conveyor having upright open receptacles, each for one portion, said conveyor consisting of a bucket chain bearing buckets forming said receptacles,

a distributor device located above the conveyor,

and means for dropping portions sequentially into said distributor device (26),

the improvement wherein the distributor device (26) comprises a distributor wall (30), means for mounting said distributor wall for rotation about a central transverse axis of rotation (31) perpendicular to the path of movement of said bucket chain (28), means for rotating said distributor wall synchronously with the bucket chain (28), said distributor wall being positioned so as to receive one portion of fibrous material (10) at a time and for transferring this to a bucket (27) after a partial rotation of the distributor wall (30), and wherein the distributor wall (30) is located underneath two feed devices and in line therewith, said feed devices comprising receptacles (43, 44) of tobacco balances (21, 22) for feeding portions (10) alternately onto said distributor wall (30), and wherein said means for rotating said distributor wall (30) comprises means to drive said distributor wall in one direction.

4,583,572
SHIELD FOR LIQUID SAMPLE CONTAINER

Randy A. Morris, 724 Abney St., St. Albans, W. Va. 25177

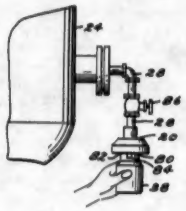
Filed Jul. 13, 1984, Ser. No. 630,758
Int. Cl.[4] B65B *3/04*
U.S. Cl. 141—97 11 Claims

1. A safety shield for a liquid sample container, said shield comprising:

a nozzle adapted to be connected in fluid communication with a source of said liquid;

a housing defining a lower open end and in operative relationship with said nozzle for partially enclosing said nozzle; and

means in operative relationship with said nozzle and with said housing for directing in a downward direction any of

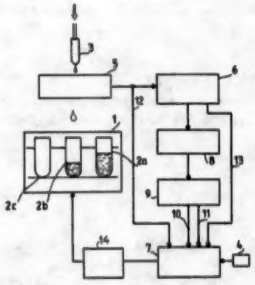


said liquid splashed or overflowed from said container and any vapors from said liquid.

4,583,573
COLLECTION APPARATUS

Rolf B. Eriksson, Solna; Bertil Jansson, Spånga, and Jörgen Sjödahl, Knivsta, all of Sweden, assignors to LKB-Produkter AB, Bromma, Sweden

Filed Oct. 11, 1984, Ser. No. 659,967
Claims priority, application Sweden, Oct. 18, 1983, 8305707
Int. Cl.[4] B65B *3/34*
U.S. Cl. 141—250 2 Claims



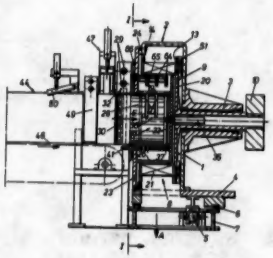
1. Collection apparatus comprising collection receptacles, a drip nozzle from which drops can be emitted, means for bringing about a relative movement between the receptacles and the drip nozzle at predetermined times to collect the drops emitted by the drip nozzle, in the different receptacles, a time measurement circuit for measuring the time between the drops, a time limit calculating circuit for calculating the lower and the upper time limits of an interval within which the next drop is expected, and a time-measuring blocking circuit to compare the time measured after said next drop has been emitted by the nozzle with the calculated time limits, and to block said relative movement when the measured time is between the time limits.

4,583,574

FLAKER FOR TRUNK AND RESIDUAL WOOD

Wilhelm Pallmann, Zweibruecken, Fed. Rep. of Germany, assignor to Pallmann Maschinenfabrik GmbH & Co. KG, Zweibruecken, Fed. Rep. of Germany

Filed Feb. 28, 1985, Ser. No. 706,688
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 3407383
Int. Cl.[4] B27L *11/02*; B27C *1/00*
U.S. Cl. 144—172 16 Claims



1. A flaker for cutting wood of any length and thickness, comprising:

a housing having an opening in front;

a feed chute for holding a supply of wood and disposed in front of said opening in the housing;

a feeding apparatus including a first plurality of pressure elements for grasping the wood and connected with the feed chute;

a cutting assembly disposed in the housing and laterally moveable in front of the feed chute, wherein the cutting assembly comprises a pot-shaped blade rotor rotatable about an axis; at a given position with respect to said blade rotor;

a rear terminal wall for defining a rear boundary of said compression chamber;

a base plate for defining a lower boundary of said compression chamber;

a fixed entrance barrier disposed directly in front of said compression chamber and at a small height above said base plate; and

a second plurality of pressure elements for grasping wood in said compression chamber and disposed opposite the base plate in the compression chamber.

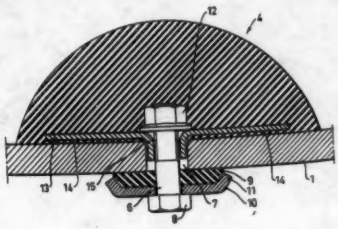
4,583,575

WEAR MEANS FOR DRUM BARKER

Lorentz Lundmark, Ersmark, Sweden, assignor to Skega AB, Ersmark, Sweden

Filed Sep. 17, 1984, Ser. No. 651,314
Claims priority, application Sweden, Sep. 30, 1983, 8305367
Int. Cl.[4] B02C *17/22*
U.S. Cl. 144—208 B 8 Claims

1. In a rotary barking drum having a mantle: a wear means as a wear protection of the drum mantle, said wear means being connected to the mantle by means of a bolt joint and comprising a wear body of an elastomeric material, a prestressing means connected in a force-absorbing manner to said wear body and a sleeve-shaped central portion arranged in a force-absorbing connection to said prestressing means, said central portion extending into a hole formed in the drum mantle for a bolt included in said bolt joint and surrounding said bolt and



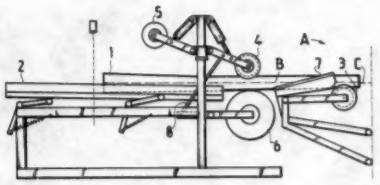
said prestressing means having its side facing the drum mantle covered with a layer of an elastomeric material.

4,583,576

MEANS FOR FEEDING A TREE TRUNK

Kauko Rautio, Kolmihaarantie, 52700 Mäntyharju, Finland

Filed Jul. 25, 1984, Ser. No. 634,166
Claims priority, application Finland, Aug. 3, 1983, 832798
Int. Cl.[4] B27B *25/02*
U.S. Cl. 144—246 E 8 Claims



1. A feeding means for laterally and vertically centering a tree trunk which is to be fed into a machine for processing round timber, said tree trunk being curved in the longitudinal direction forming convex and concave longitudinal sides, and having longitudinally opposite ends, wherein the feed means comprises: a feed gutter, a spring wheel located downstream of the feed gutter, both said feed gutter and said spring wheel serving as underlying points of support for the trunk ends, at least one feed wheel located above the trunk and a carrying wheel for supporting the tree trunk located opposite the feed wheel.

4,583,577

CONTAINER INSULATOR

Charles L. Canfield, Dallas, Tex., assignor to Pat Canfield; Cindy Canfield and Cammy Canfield, all of Dallas, Tex.

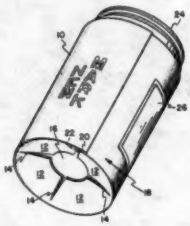
Filed Aug. 27, 1984, Ser. No. 644,341
Int. Cl.[4] B65D *3/06, 81/14, 8/00, 23/08*
U.S. Cl. 150—52 R 7 Claims

1. An insulating cover for a container, comprising:

a resilient cylindrical sidewall member formed to a selected first radius of curvature and defining two vertical edges overlapping to increase said first radius of curvature, and

a plurality of bottom wall segments each depending from said sidewall and separated by slits effective for slidingly

overlapping adjacent bottom wall segments at said first radius of curvature in a generally concave configuration,



said overlapping adjacent bottom wall segments defining an iris-like central aperture having a variable diameter.

4,583,578

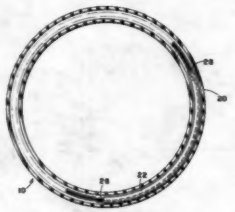
SEALING DEVICE FOR FACILITATING PRESSURING OF TUBELESS TIRES

Dolphard Gaither, Rt. 1, Box 43, Cameron, Okla. 74932

Continuation-in-part of Ser. No. 427,952, Sep. 29, 1982, Pat. No. 4,506,719. This application Mar. 20, 1985, Ser. No. 713,994

Int. Cl.[4] B60C *25/00*

U.S. Cl. 157—1.1 **4 Claims**



1. A sealing device for facilitating pressuring of a tubeless tire and adapted to be positioned in the hiatus between the deflated tire and the associated wheel, the sealing device comprising hollow endless tube means, cable means extending through at least a portion of the circumference of the interior of the hollow endless tube means, and helical spring means extending through the remaining circumferential portion of the hollow ring means and having the opposite ends thereof in engagement with the opposite ends of the cable means for retaining thereof within the interior of the hollow endless tube means.

4,583,579

METHOD OF DIE CASTING

Isao Miki, Shizuoka; Tsutomu Nagi, Numazu, and Haruyasu Kattoh, Shimizu, all of Japan, assignors to Nippon Light Metal Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1984, Ser. No. 632,666

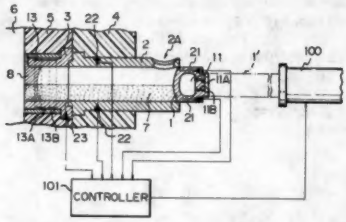
Claims priority, application Japan, Jul. 25, 1983, 58-135361

Int. Cl.[4] B22D *17/32*

U.S. Cl. 164—457 **15 Claims**

6. A method of determining the presence of an abnormal operating condition taking place during the sequential molding of a plurality of metal castings in a molding machine in which molten metal is forcibly injected into a mold cavity through a sleeve and a spool bush by means of a plunger tip secured to a plunger which is reciprocally driven in the sleeve, said method comprising the steps of:

(a) continuously measuring the temperature of at least one portion of the molding machine during the molding operation and



(b) calculating the clearance between the sleeve and the plunger tip based on the temperature of said at least one portion of the molding machine.

4,583,580

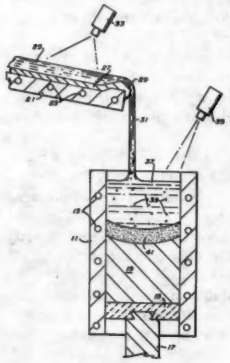
CONTINUOUS CASTING METHOD AND INGOT PRODUCED THEREBY

Charles D. Hunt, Occidental, Calif., assignor to Electro Metals, a division of Demetron, Inc., Union City, Calif.

Filed Sep. 28, 1984, Ser. No. 656,151

Int. Cl.[4] B22D *27/02, 11/00*

U.S. Cl. 164—469 **10 Claims**



1. A method of continuously casting an ingot of a metal alloy of a type having a substantial liquidus-solidus temperature range to produce internal microstructure of a desired fineness, said method comprising:

flowing the molten alloy along an electron beam heated skulled hearth while controlling the electron beams to maintain a solids content in the alloy on the hearth of between about 15% and about 40%,

pouring the molten alloy from the hearth into the top of a continuous casting mold at a rate sufficient to cause the maintenance of a fluid pool at the top of the ingot and a substantial thixotropic region below the pool at the upper end of the fully solidified portion of the alloy in the mold and below the region at which the molten alloy from the hearth enters the mold, said thixotropic region having a solids content of at least about 50%,

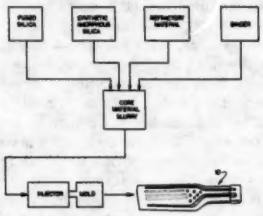
and withdrawing the solidified alloy from the mold at a rate of between about 0.15 kilograms per hour per square centimeter and 0.90 kilograms per hour per square centimeter.

4,583,581

CORE MATERIAL AND METHOD OF FORMING CORES

Thomas A. Ferguson, Parma; Duane Dierschow, Willoughby, and Robert F. Hauser, North Olmsted, all of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed May 17, 1984, Ser. No. 611,429
Int. Cl.[4] B22C 1/02
U.S. Cl. 164—529 9 Claims



1. A material for use in forming cores to be used in casting an article, said core material comprising fused silica, synthetic amorphous silica, a refractory material, and a binder, said synthetic amorphous silica having a surface area of at least 200 square meters per gram.

6. A method of forming cores of a predetermined size and configuration for use in investment casting of articles, said method comprising the steps of providing a core material slurry containing fused silica, synthetic amorphous silica having a surface of more than 200 square meters per gram, refractory material and a binder, providing a core mold having a cavity of a size and configuration which is a function of the desired core size and configuration of the core, shaping a first portion of the core material slurry in the core mold to form a first green core, firing the first green core to form a first fired core, said step of firing the first green core including the step of allowing the material of the first green core to shrink by a first amount, measuring the first fired core to determine the extent to which its size deviates from the desired size, compensating for deviations in the size of the first fired core from the desired size by varying the percentage of synthetic amorphous silica in the core material, shaping a second portion of the core material slurry in the core mold to form a second green core after having performed said step of varying the percentage of synthetic amorphous silica in the core material slurry, and firing the second green core to form a second fired core.

8. A core for use in casting an article, said core being formed of fused silica, a refractory material, a binder, and synthetic amorphous silica having a surface area of at least 200 square meters per gram.

4,583,582

HEAT EXCHANGER SYSTEM

Arthur Grossman, Framingham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

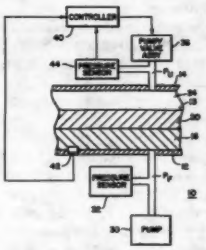
Continuation of Ser. No. 366,931, Apr. 9, 1982, Pat. No. 4,495,988. This application Aug. 2, 1984, Ser. No. 637,167
Int. Cl.[4] F28D 15/00
U.S. Cl. 165—32 10 Claims

1. A system for transferring heat from a first surface through a second surface, said second surface being characterized by a substantially uniform thermal envelope, comprising:

an inner porous homogenous layer adjacent to said first surface, said inner layer being characterized by relatively high porosity and thermal conductivity, and being adapted to house coolant,

an outer porous homogenous layer between said inner layer and said second surface, said outer layer being characterized by relatively low porosity and relatively high thermal conductivity, wherein said outer layer is thermally coupled to said inner layer and the pores of said outer layer are coupled to the pores of said inner layer permitting coolant flow therebetween,

a vapor chamber between said second surface and an outer member,



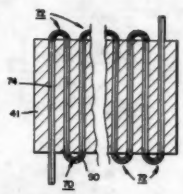
means for selectively controlling the vapor pressure in said vapor chamber whereby said coolant has a liquidvapor phase transition within said outer layer.

4,583,583

FUEL CELL CRIMP-RESISTANT COOLING DEVICE WITH INTERNAL COIL

Charles F. Wittel, deceased, late of Linden, N.J. (by Ann E. Wittel, executor), assignor to Engelhard Corporation, Iselin, N.J.

Filed Jun. 2, 1983, Ser. No. 500,465
Int. Cl.[4] F28F 21/06
U.S. Cl. 165—46 5 Claims



1. A cooling assembly for use in removing heat from a fuel cell having means for circulating coolant through the cooling assembly adjacent the cell, the cooling assembly comprising:

(a) a bendable length of flexible conformable material having the capability of withstanding the corrosive materials of a fuel cell environment having a coolant passageway along the length thereof said passageway having a plurality of straight parallel sections spaced one from another and also having a plurality of bend sections coupling said parallel sections in serpentine configuration and

(b) means located within the passageway formed as coils within the bend sections for enhancing the ability of the flexible material to bend into relatively small radii without crimping, said last mentioned means being formed straight within the straight parallel sections with the passageway maintaining its ability to carry coolant along the length of the material, of the coil.

4,583,584

SEISMIC SNUBBER ACCOMMODATING VARIABLE GAPS IN PRESSURE VESSELS

Robert M. Wepfer, Wilkinsburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1984, Ser. No. 662,649
Int. Cl.[4] F28F 7/00; G21C 9/00
U.S. Cl. 165—82 12 Claims

1. Apparatus for providing a direct load path for seismic

forces between the cylindrical shell member of a pressure vessel and internal members within the pressure vessel and which accommodates for variations in the spacing between said members resulting from the difference in thermal expansion coefficients of the members and due to radial expansion of the shell member when the pressure vessel is pressurized, said apparatus comprising:

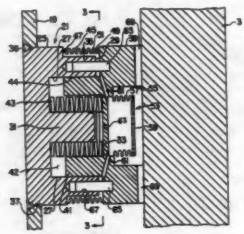
a dashpot element defining a recess therein;

a plunger element axially slidable in the recess of the dashpot element, said elements forming an enclosed chamber of variable volume;

means securing one of said elements to one of said shell and internal members;

biasing means for biasing said elements apart such that the other element bears against the other member; and

a collapsible reservoir for an essentially incompressible fluid connected to one of said elements and exposed to ambient pressure in said pressure vessel, said one element defining a metering passage between said collapsible reservoir and said variable volume enclosed chamber through which the incompressible fluid passes from the reservoir to the chamber to keep said chamber full of fluid under the urging of the ambient pressure in the pressure vessel as the spacing between the shell member and the internal members increases as a result of the difference in the coefficients of thermal expansion between the shell and internal members and the radial expansion of the shell member under pressure and as the biasing means maintains said other element in contact with said other member to increase the volume of said enclosed chamber, and through which fluid is returned to the collapsible reservoir as the members cool and the pressure in said vessel is reduced, said metering passage being sized such that essentially no fluid passes therethrough as a result of seismic vibrations and hence, said apparatus provides a direct load path through the dashpot and plunger elements and the essentially incompressible fluid for the seismic forces despite variations in the distance between the shell and the internal members due to differential thermal expansion and pressure in the pressure vessel.



10. Apparatus for providing a direct load path for seismic forces between a first member comprising the cylindrical shell of a steam generator and a second member comprising the internals within the shell, and which accommodates for the variations in the spacing between said members resulting from the difference in thermal expansion coefficients of the members and due to radial expansion of the first member when the steam generator is pressurized, said apparatus comprising:

a cylindrical dashpot element secured at one end to one of said members and having an annular bore in the other end thereof defined by an axially extending collar and a central, axially extending boss;

a cylindrical plunger element having an annular sleeve of reduced diameter which extends axially from one end thereof and is slidably received in the annular bore in the dashpot element, and having a bore in the other end thereof;

hollow compression spring means surrounding said boss and bearing against the bottom of the annular bore in said dashpot element and against the plunger element to bias the plunger element against said other member;

a bellows seal secured to the periphery of said other end of the dashpot element and the periphery of the first end of the plunger element, said plunger element and dashpot element defining an enclosed chamber having a volume which varies as the plunger element moves toward and away from the dashpot element; and

collapsible reservoir means for a substantially incompressible fluid mounted in said bore in the other end of the plunger element which also defines a metering passageway between said reservoir and said enclosed variable volume chamber, said passageway being sized such that fluid passes from the reservoir under urging of the ambient pressure in the steam generator into said chamber as the first and second member move apart as a result of expansion of the steam generator shell under pressure and due to differences in thermal expansion of the first and second members, and fluid is returned to the reservoir as the members cool and the pressure in the steam generator decreases to bring the members closer together, but substantially no fluid passes through said metering passageway in response to the seismic forces so that the plunger element, the dashpot element and the substantially incompressible fluid in the enclosed chamber form a rigid construction which provides a direct load path for the seismic forces between the shell and the internals.

4,583,585

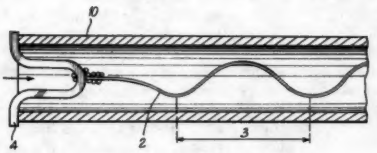
SYSTEM FOR CLEANING TUBE-TYPE EXCHANGERS AUTOMATICALLY DURING OPERATION

Patrick Estienne, Vernouillet, and Michel Sanson, Les Essarts le Roi, both of France, assignors to Elf France, Courbevoie, France

Continuation of Ser. No. 285,783, Jul. 22, 1981, abandoned. This application Jan. 18, 1984, Ser. No. 572,124

Int. Cl.[4] F28G *1/12, 3/08*

U.S. Cl. 165—94 **4 Claims**



1. In a tube-type assembly comprising a tubular member wherein a fluid stream may flow from an upstream end towards a downstream end of said member, a device for cleaning the inner surface of said member, said device consisting essentially of:

support means extending to the axis of said tubular member adjacent the upstream end thereof and which is non-movable along the axis of said tubular member; and

a corrosion-resistant and abrasion-resistant resilient metal wire having an elongated spiral shape having at least one end fixedly engaging said support means at the axis of said tubular member, said metal wire elongated spiral being disposed within said approximately coaxial with said tubular member,

said elongated spiral having an outer diameter substantially greater than the diameter of the wire comprising the elongated spiral and in the range of 0.5 to 0.9 times the inner diameter of said tubular member, the distance between successive loops of said elongated spiral being substantially greater than the diameter of said wire,

whereby said metal wire elongated spiral is sufficiently flexible such that said fluid stream causes said spiral to

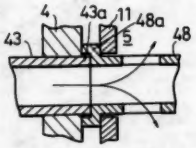
rotate and said wire to strike and rub against the inner surface of said tubular member to clean said inner surface.

4,583,586

APPARATUS FOR CLEANING HEAT EXCHANGER TUBES

Masakazu Fujimoto, and Naoyuki Inoue, both of Tokyo, Japan, assignors to Ebara Corporation, Japan

Filed Dec. 6, 1984, Ser. No. 678,780
Int. Cl.[4] F28G *1/12, 15/02*
U.S. Cl. 165—95 **3 Claims**



1. In apparatus for cleaning inner surfaces of heat exchanger tubes of a heat exchanger, wherein said heat exchanger includes a bundle of elongate heat exchanger tubes having opposite ends mounted to respective partition plates and communicating with respective forward and rearward heat exchanger fluid enclosures, each end of each of said heat exchanger tubes being provided with a chamber for capturing a tube cleaning element adapted to move in opposite directions through said tube upon reversing the direction of flow of heat exchanger fluid therethrough so that said inner surface of said tube is cleaned by the moving tube cleaning element, wherein said chambers are detachably mounted to respective ends of said tubes by mounting means including holder plate means having openings formed therethrough at locations corresponding to the locations of said tube ends mounted to a respective partition plate, and means for mounting said holder plate means to said partition plate, and wherein each chamber includes an integral flange portion formed at one end thereof, said flange portion being held between said partition plate and said holder plate means, the improvement comprising: said ends of said heat exchanger tubes include end portions which project beyond respective partition plates to which they are mounted into respective heat exchanger fluid enclosures, said flange portion of each chamber comprises a stepped flange portion having a stepped configuration, said stepped flange portion of a respective chamber being fitted over said projecting end portion of a respective one of said heat exchanger tubes.

4,583,587

MULTI-LEG HEAT PIPE EVAPORATOR

Joseph P. Alario, Hauppauge, and Robert A. Haslett, Dix Hills, both of N.Y., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

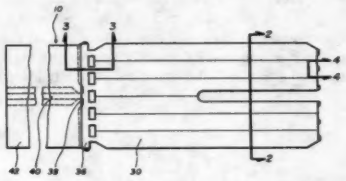
Filed May 31, 1984, Ser. No. 616,002
Int. Cl.[4] F28D *15/00*
U.S. Cl. 165—104.26 **7 Claims**

1. A high capacity, sealed, monogroove heat pipe assembly comprising:

an evaporation section formed of a plurality of parallel legs, each leg, containing a liquid channel a vapor channel and a communicating capillary slot therebetween, the vapor channel having circumferentially extending capillary grooves in the wall thereof;

a manifold in fluid communication with the liquid channels and the vapor channels;

a condenser section in fluid communication with the manifold, said condenser section having a single liquid channel and a single vapor channel with a communicating capillary slot therebetween, the vapor channel having circumferentially extending capillary grooves in the wall thereof; and



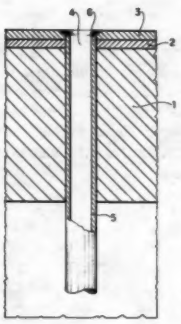
a heat radiating fin encasing the condenser section.

4,583,588

ASSEMBLY DEVICE OF FERRITIC STAINLESS STEEL TUBES ON A CARBON STEEL TUBE-PLATE, AND PROCESS OF MANUFACTURING THIS DEVICE

Marc Franzolini, Chevry II; Edmond Maria, Asnieres; Alain Vanderschaeghe, Roubaix, and Jean Bezier, Croix, all of France, assignors to Stein Industrie, France

Filed Jul. 5, 1984, Ser. No. 628,082
Claims priority, application France, Jul. 6, 1983, 83 11261
Int. Cl.[4] F28F *9/18*
U.S. Cl. 165—173 **3 Claims**



1. Assembly device of tubes of low carbon ferritic stainless steel having 17 to 18.5% by weight of chromium on a tube-plate of carbon steel, characterized in that it includes a first overlay of low carbon austenitic stainless steel having 11.50 to 14% by weight of nickel and 22 to 25% by weight of chrome on the surface of the tube-plate opposite the plurality of tubes, a second overlay on the first of low carbon austenitic stainless steel having 10 to 12% by weight of nickel and 19 to 23% by weight of chromium extending beyond the upper level of the ends of the tubes, and weld beads with or without filling metal around these ends between these ends and the stainless steel of the second overlay.

4,583,589

SUBSURFACE RADIATING DIPOLE

Raymond S. Kasevich, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

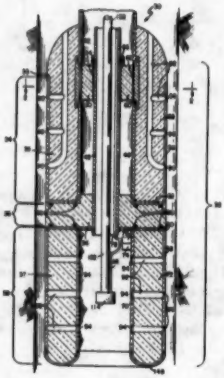
Continuation of Ser. No. 313,883, Oct. 22, 1981, abandoned.
This application Apr. 24, 1984, Ser. No. 602,278
Int. Cl.[4] E21B *36/04, 43/24*
U.S. Cl. 166—60 **23 Claims**

1. A subsurface radiating system comprising:

a dipole antenna having first and second radiating elements radiating into a subsurface medium having a dielectric constant substantially greater than unity;

each of said radiating elements having a conductive portion forming a portion of a cavity;

a transmission line having an inner conductor surrounded by an outer conductor electrically connected between said radiating elements, said outer conductor being connected



to said first of said radiating elements and said inner conductor being connected to said second of said radiating elements; and

means comprising a solid dielectric within said cavity portion of each of said radiating elements for producing resonant loading of a free end of said first one of said dipole radiating elements and for providing structural reinforcement for said first and second radiating elements.

4,583,590

SLIP RELEASING APPARATUS

Donald R. Greenlee, Cedar Hill; David G. Dearing, Duncanville, both of Tex., and Andrew J. Tucker, Tulsa, Okla., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 21, 1985, Ser. No. 703,797

Int. Cl.[4] E21B *23/00*

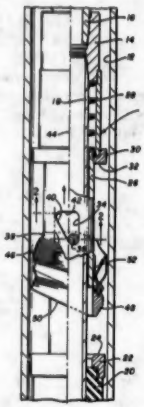
U.S. Cl. 166—216 **7 Claims**

1. An improved slip releasing apparatus for packers and the like useful in pipes, well bores and the like comprising:

a unitary slip member pivotal between set and unset positions, said slip member being of generally cylindrical configuration and including wall engaging teeth on an outer surface thereon, said teeth being located on generally diagonally opposite portions of upper and lower ends, respectively;

diametrically opposed releasing pins mounted in said slip member adjacent to said upper end and projecting inwardly therefrom; and,

an elongated tubular slip carrier member extending through said slip member and being moveable relative thereto, said carrier member having a pair of releasing recesses located therein for receiving said pins, said recesses forming releasing surfaces in said carrier member engaging said pins



which said carrier member is moved in a direction to move said slip member toward the unset position.

4,583,591

DOWNHOLE LOCKING APPARATUS

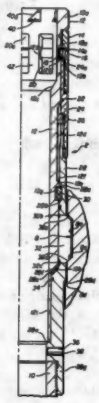
William F. Krause, Jr., Spring, and Mark E. Hopmann, Houston, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Continuation of Ser. No. 468,421, Feb. 22, 1983, Pat. No. 4,510,995. This application Dec. 31, 1984, Ser. No. 688,069

The portion of the term of this patent subsequent to Apr. 16, 2002, has been disclaimed.

Int. Cl.[4] E21B *23/02*

U.S. Cl. 166—217 **6 Claims**



1. Apparatus anchorable in a nipple having an annular recess and a no-go shoulder in a subterranean well; comprising:

a housing;

at least one radially expandable locking dog radially shiftable between retracted and expanded positions and comprising means cooperable with the nipple annular recess in the expanded position for anchoring the apparatus to the nipple gainst oppositely directed axial forces;

no-go means for engaging the nipple no-go shoulder when each locking dog is in the retracted position to prevent further downward movement of the apparatus past the nipple, the no-go means being spaced from the no-go shoulder when each locking dog is in the expanded position; and

a mandrel shiftable relative to the housing from a first to a second position and engagable with each locking dog for radially expanding each locking dog into the nipple annular recess; and

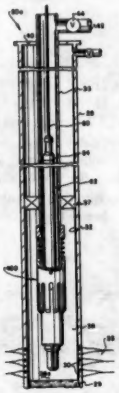
locking means engagable between the mandrel and the housing to retain the mandrel in the second position, only when each locking dog is in the expanded position and the no-go means is spaced from the no-go shoulder, whereby both upward and downward axial forces on the apparatus are transferred to the nipple through the expanded locking dog and not through the no-go means and no-go shoulder.

4,583,592

WELL TEST APPARATUS AND METHODS

Imre I. Gazda, Fort Worth, and Phillip S. Sizer, Dallas, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 27, 1984, Ser. No. 604,502
Int. Cl.[4] E21B *34/14, 43/12, 47/06*
U.S. Cl. 166—250 **49 Claims**



1. A test tool for testing a well to be run on a flexible line and anchored in downhole receptacle means in a flow conductor therein for controlling flow through the flow conductor, said tool being openable and closable by tensioning and relaxing the flexible line to permit and prohibit flow therethrough, said tool having a flow passage for conducting well pressure from therebelow to pressure sensing means thereabove all the while said test tool is in the well, the downhole receptacle having a pair of internal annular recesses providing a pair of oppositely facing abrupt lock shoulders therebetween, said test tool comprising:

a. tubular mandrel means having lateral flow port means near its upper end;

b. lock keys mounted on said tubular mandrel means and configured to engage said pair of recesses and said pair of oppositely facing lock shoulders in said downhole receptacle means, said keys being movable between retracted and expanded positions;

c. means biasing said keys outwardly toward expanded position;

d. key retractor sleeve means slidably mounted on said tubular mandrel means and having cam means thereon engageable with said lock keys to retract them to unlocked position responsive to upward movement of said key retractor sleeve means relative to said tubular mandrel means;

e. control ring means rotatably carried by said retractor sleeve means and having inwardly projecting pin means fixed thereto;

f. tubular body member means having means on one end thereof for connection to a conductor cable or wire line and having its other end telescoped over the upper end portion of said tubular mandrel means for limited longitudinal movement relative thereto, said tubular body member means having its lower end portion reduced in diameter and telescoped into the upper end portion of said key retractor sleeve means, said reduced diameter portion of said tubular body member means being formed with control slot means for receiving said pin projecting inwardly from said control ring, said control slot means being of the zig-zag type and having a plurality of open-ended slot legs each permitting said tubular body member to be lifted to the upper limit of its travel without lifting said key retractor sleeve, said control slot means having at least one short closed-end slot leg for engaging and lifting said key retractor sleeve means, said control slot means being so configured that each time the tubular body member means is lifted relative to said tubular mandrel means, said control ring indexes and causes said control pin to advance to the next control slot leg, said tubular body member means having window means alignable with said flow port means of said tubular mandrel means when said tubular body member means is in its lowermost position relative to said tubular mandrel means;

g. biasing means between said tubular mandrel means and said tubular body member means biasing said tubular body member means downwards relative to said tubular mandrel means; and

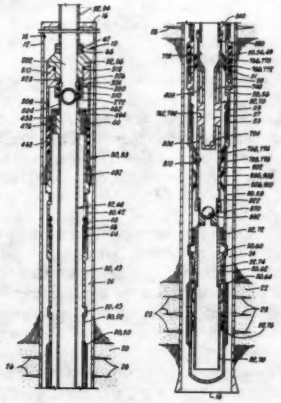
h. means on said tubular mandrel means engageable with said receptacle to seal between said receptacle and said tubular mandrel means.

4,583,593

HYDRAULICALLY ACTIVATED LINER SETTING DEVICE

Gary D. Zunkel, Chickasha, and Lee W. Stepp, Commanche, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 20, 1985, Ser. No. 703,629
Int. Cl.[4] E21B *23/06, 43/10*
U.S. Cl. 166—382 **20 Claims**



1. A liner setting apparatus for setting a liner hanger located below said apparatus within a well, comprising:

a housing means having a housing bore disposed therethrough;

a ball valve means disposed in said housing bore and having a ball valve bore disposed therethrough, said ball valve means being rotatable between an initial closed position wherein said housing bore is closed by said ball valve means and an open position wherein said ball valve bore is aligned with said housing bore;

differential pressure responsive liner setting means, operably associated with said housing means, for setting said liner hanger in response to an increase in fluid pressure within an upper portion of said housing bore above said initially closed ball valve means; and

differential pressure responsive valve actuating means, operably associated with said ball valve means, for moving said ball valve means from its said initial closed position to its said open position in response to an increase in fluid pressure within a well annulus external of said apparatus.

15. A method of setting a liner hanger or the like within a well, said method comprising the steps of:

(a) making up said liner hanger on a tool string below a setting tool including a rotatable ball valve disposed in a housing bore of said setting tool;

(b) lowering said tool string on a tubing string into said well with said ball valve in a closed position closing said housing bore and preventing flow of well fluid upward through said housing bore;

(c) during step (b), bypassing well fluid from a lower portion of said housing bore below said closed ball valve radially outward into a well annulus surrounding said setting tool, then radially inward into a tubing bore of said tubing string above said closed ball valve;

(d) closing an upper bypass port of said tool string thus isolating said well annulus from said tubing bore;

(e) increasing fluid pressure within said tubing bore; and

(f) actuating a differential pressure responsive setting means of said setting tool and; thereby

(g) setting said liner hanger within said well; then

(h) increasing fluid pressure within said well annulus; thus

(i) actuating a differential pressure responsive valve actuation means operably associated with said ball valve; and thereby

(j) moving said ball valve to an open position wherein said housing bore is openly communicated with said tubing bore.

4,583,594

DOUBLE WALLED SCREEN-FILTER WITH PERFORATED JOINTS

Bozidar Kojicic, 30 Lincoln Plz., Apt. 22H, New York, N.Y. 10023

Continuation of Ser. No. 404,146, Aug. 2, 1982, Pat. No. 4,526,230. This application Nov. 15, 1984, Ser. No. 671,983

Claims priority, application Yugoslavia, Aug. 4, 1981, 17143/81; Fed. Rep. of Germany, Jun. 16, 1982, 3222627

Int. Cl.[4] E21B *43/08*

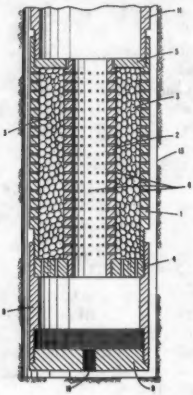
U.S. Cl. 166—228 **3 Claims**

1. A filter adapted to be installed in a hole formed in fluid bearing formations to prevent sanding and silting-in during production, comprising:

(a) a pair of spaced, substantially concentric and cylindrical screen members positioned to define an annular filter space therebetween;

(b) filter means substantially filling the annular filter space for filtering particulate materials from the fluid flowing through said filter, the particulate materials having a tendency to pass into a well;

(c) means connecting the inner and outer screen together for centering the inner screen within the outer screen and for supporting and maintaining said filtering material within said filtering space; and



(d) a sedimentation tube connected in communication with said filtering space to receive particulate material filtered by said filtering material.

4,583,595

METHOD AND APPARATUS FOR OBTAINING FLUID SAMPLES IN A WELL

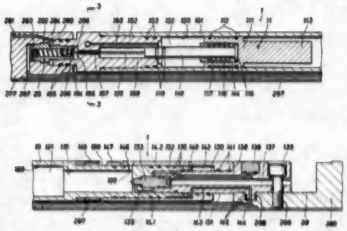
Jean A. Czernichow, Chatenay Malabry, and Alain R. Chevassus-More, Fontenay aux Roses, both of France, assignors to Schlumberger Technology Corp., Houston, Tex.

Filed Dec. 20, 1984, Ser. No. 684,422

Claims priority, application France, Dec. 22, 1983, 83 20604

Int. Cl.[4] E21B *49/08*

U.S. Cl. 166—264 **16 Claims**



1. A borehole apparatus for obtaining a respresentative fluid sample in a borehole comprising:

a housing adapted for passage through a borehole;

a sampling vessel removably fixed to a recess in said housing, said vessel having a cylindrical bore and a sample admitting opening;

a piston sealingly positioned in said bore and relatively movable between a collapsed position of adjacency and an extended, space-apart position relative to one end of said bore to define therebetween a fluid sample-receiving chamber;

actuable means, in communication with said bore, for controlling the relative movement of said piston in said chamber, said actuable means being provided in said housing;

means for closing said opening after a given relative movement of said piston is effected in response to the actuation of said controlling means; and

means for severing the communication between said controlling means and said chamber after the closing of said opening for allowing the removal of said vessel from said housing without affecting said vessel or its contents by the act of removal.

15. A method for obtaining a representative fluid sample in a borehole comprising the steps of:

lowering a housing adapted for passage through a borehole into a borehole;

removably fixing a sampling vessel to a recess in said housing, said vessel having a cylindrical bore, a sample admitting opening and a piston sealingly positioned in said bore and relatively movable between a collapsed position of adjacency and an extended, space-apart position relative to one end of said bore to define therebetween a fluid sample-receiving chamber;

controlling the relative movement of said piston in said chamber through actuable means provided in said housing;

admitting a sample of borehole fluid into the bore;

closing said opening after a given relative movement of said piston is effected; and

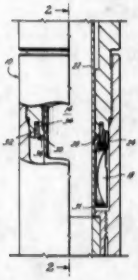
severing the communication between said housing and said vessel after the closing of said opening for allowing the removal of said vessel from said housing without affecting said vessel or its contents by the act of removal.

4,583,596

DUAL METAL SEAL FOR A WELL SAFETY VALVE

Jonathan P. Davis, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Sep. 13, 1985, Ser. No. 776,066
Int. Cl.[4] E21B *34/12*
U.S. Cl. 166—332 **6 Claims**



5. In a subsurface well safety valve for controlling the fluid flow through a well conduit including a housing having a bore and a pivoting metal flapper valve in the bore moving between open and closed positions, the improvement in a seat coacting with the flapper valve comprising,

a solid metal annular seat directed downwardly about the bore for coacting with the flapper,

said housing including an annular recess outside of the solid metal seat, said recess including a downwardly directed opening adjacent the metal solid seat,

a flexible metal seal in the recess, said flexible seal having a base secured in the recess and a resilient sealing lip which is generally V-shaped in cross section with one end of one of the legs of the V being connected to the base and the other leg initially extending out of said opening and downwardly beyond the solid seat for making contact with the flapper before the flapper contacts the solid seat upon closing,

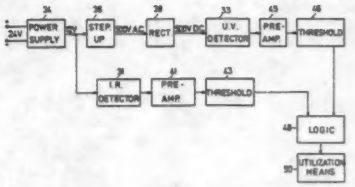
said solid seat and the sealing lip are directed downwardly at an angle and the downwardly directed angle of the sealing lip is greater than the downwardly directed angle of the solid seat.

4,583,597

FIRE AND EXPLOSION DETECTION AND SUPPRESSION SYSTEM

Dov Spector, 36 Har-Dafna Street, Savion, and Yehiel Spector, 5 Avner Street, Zahala-Tel Aviv, both of Israel

Continuation of Ser. No. 615,899, May 30, 1984, abandoned, which is a continuation of Ser. No. 268,236, May 29, 1981, abandoned, which is a continuation of Ser. No. 902,608, May 3, 1978, Pat. No. 4,270,613. This application Jun. 14, 1985, Ser. No. 744,652
Claims priority, application Israel, May 3, 1978, 54138
Int. Cl.[4] A62C *37/18*
U.S. Cl. 169—61 **11 Claims**



1. For use in a fire and explosion suppression system adapted to suppress an explosion within 100 milliseconds of the existence of a high energy ignition and within 200 milliseconds, of the existence of a low energy ignition, and comprising a plurality of detectors and a plurality of suppression elements communicating with a volume to be protected, actuation circuitry comprising:

means, operative in a normal mode of operation, for operating said suppression elements in response to different types of detection including:

first means operative in response to detection of a first type wherein a first number of detectors detect within a first time span for operating a first number of suppression elements; and

second means operative in response to detection of a second type wherein a second number of detectors detect within a second time span for operating a second number of suppression elements greater than said first number of suppression elements;

said detection of said second type being characterized in that at least one of the following criteria are fulfilled:

(a) said second number of detectors exceeds said first number of detectors; and

(b) said second time span is less than said first time span;

said actuation circuitry also comprising

means, operative in a combat mode of operation, for operating at least two suppression elements in response to detection by at least one detector; and

means for sensing the failure of a suppression element to operate and for operating an additional suppression element in response to said sensed failure.

4,583,598

ROW MARKER

Kenneth J. Knels, Rte. #2, Box 93A, Fairview, Mont. 59221

Filed May 4, 1984, Ser. No. 607,154
Int. Cl.[4] A01B *17/00*
U.S. Cl. 172—126 **10 Claims**

1. A row marker for a farm implement of the type having an elongated mainframe which is generally disposed transversely to the direction for its travel over a field in farming operations, comprising

a horizontal base bar at the end of the elongated mainframe

and having an orientation substantially parallel with the direction of travel for the mainframe,

a vertical post fixed on the base bar at a location near one end thereof,

a marker assembly swingable from a substantially horizontal orientation operative for marking into an upright overhead folded condition inoperative for marking, said marker assembly comprising,

a main arm pivotally mounted to the base bar at the post location and extending substantially perpendicularly outward from the base bar,

a marker bar carrying earth marking means mounted at a location intermediate its ends as a pivotable member at the end of said main arm, with a stub lever section of the marker bar extending on one side of the pivot mounting thereof and a primary elongated section of the marker bar extending on the other, and

a diversion arm extending substantially transversely to the horizontal base bar and having one end thereof mounted for pivotal and longitudinally floating movement at a location proximate to the upper end of said post and the other end thereof pivotally mounted to the

outer end of the stub lever section of the marker bar, a brace arm having one end pivotally mounted to the base bar at a spaced location from the pivotal mounting of the main arm and connected at its other end to said marker arm for bracing the pivot mounting for the marker arm, said brace arm extending at an angle with respect to said main arm, and

powered means for swinging said main arm upwardly about its pivot mounting to the base bar from a substantially horizontal projection from the base bar into a substantially upright projection from the base bar, the relationship between the pivot connections at each end of the diversion arm being alone effective to cause the marker bar to assume a substantially perpendicular relationship to the main arm when the main arm projects substantially upright from its pivot mounting, and to assume a substantially aligned relationship to the main arm when the main arm projects generally horizontally from its pivot mounting, said mounting for longitudinally floating movement of said diversion arm being such as to permit variations in the angle of horizontal projection of the main arm and marker bar in response to the level of the land over which the marker bar travels.

4,583,599

GROUND WORKING SWEEP

Gerald J. Anderson, Box 1317, Melville, Saskatchewan, Canada (S0A 2P0)

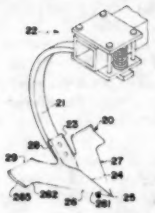
Filed Sep. 24, 1984, Ser. No. 653,594

Claims priority, application Canada, Sep. 27, 1983, 437696

Int. Cl.[4] A01B *23/02*

U.S. Cl. 172—730 **3 Claims**

1. A ground working sweep comprising a metal body having means for attachment of the body to a support tine whereby the sweep can be drawn through the earth, said body including a sweep portion having a cutting edge projected forwardly from the tine for engaging the earth as the sweep is moved through the earth, the cutting edge having a forwardmost central point and two side edges which extend from the point and each of which includes a first substantially straight portion inclined sidewardly and rearwardly away from the point relative to a longitudinal axis central to the sweep and a pair of wing portions, each wing portion extending outwardly to a respective side of the sweep portion and defining a second substantially straight portion of the cutting edge contiguous with the first and substantially at right angles to the longitudinal axis, an outermost side edge of each wing portion extending parallel to the longitudinal axis, and each wing portion having a trailing edge inclined upwardly from the second portion of



the cutting edge relative to a trailing edge of the sweep portion to assist in throwing out weeds upwardly to the ground surface, the spacing between the trailing edge of the wing portion and the second cutting edge portion being substantially equal to the spacing between the trailing edge of the wing portion and the first cutting edge portion.

4,583,600

IMPACT TOOL

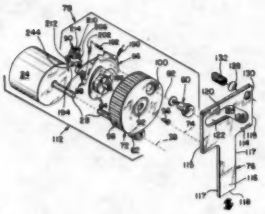
Somers H. Smith, III, Columbia, Md., assignor to Black & Decker Inc., Newark, Del.

Division of Ser. No. 259,456, Apr. 30, 1981, Pat. No. 4,449,660.

This application Mar. 7, 1984, Ser. No. 587,131

Int. Cl.[4] B25D *11/10*

U.S. Cl. 173—124 **10 Claims**



1. A tool for driving objects, comprising:

(a) a rotary motor mounted in the tool for continuous rotation;

(b) a gear driven by the motor;

(c) a drive pin axially shiftable in and rotatable with the gear;

(d) a drive bar reciprocated in the tool for driving fasteners therein during a power stroke;

(e) the drive pin connectable to the drive bar to translate the motion thereto to produce a power stroke and a return stroke;

(f) interrupt means engageable with the driven pin for disconnecting the drive pin from the drive bar to prevent successive drive strokes relative to gear rotation;

(g) the drive pin has a follower; and

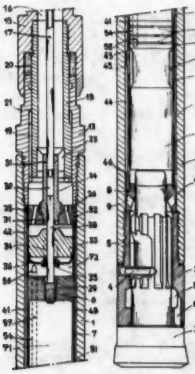
(h) the interrupt means includes a track for the follower, and a shifter to shift the follower upon the track to cause engagement or disengagement between the drive pin and the drive bar.

4,583,601

HAMMER DRILL

Marcel Téchy, Fontaine l'Eveque, Belgium, assignor to Stenuick Freres, Fontaine l'Eveque, Belgium

Filed Jun. 6, 1983, Ser. No. 501,735
Claims priority, application France, Jun. 4, 1982, 82 09774
Int. Cl.[4] E21B 1/00
U.S. Cl. 173—134 **5 Claims**



1. A hammer drill of the "hole bottom" type, comprising a tubular body (1) having a bottom portion connected to a tubular end piece (2) in which a drill bit (3) is slidingly mounted with limited axial displacement (45) by an upward projecting shank, said body (1) having a top portion connected to a tubular connector (13) in which is slidingly and sealingly received, with limited axial displacement, a hollow piston (18) connected to an annular duct forming part (15) for feeding compressed air and slidingly fitted over an upper end portion of said connector, said duct forming part (15) surrounding a fuel feeding central pipe (17) axially extending through said hollow piston and having a lower end axially engaged in a tubular member (24) which is connected to said hollow piston and to a piston (25) through which extends at least one compressed air feeding duct (26), the hammer drill further comprising a liner (7) extending inside said body and over almost the entire length of the latter, and having a central solid core (6) defining in said liner two axial chambers one of which is a lower chamber opening towards said body bottom portion, and the other being an upper chamber opening towards said body top portion, a percussion piston being sealingly and reciprocatingly mounted in said lower chamber and defining therein a combustion chamber extending above said percussion piston, between the latter and said central core (6), and a bottom chamber extending below said percussion piston and in which a top portion of said drill bit shank sealingly projects, whereas a block (33), housing a piston-type fuel distributor device (34), is in a fixed position in said upper chamber between said central core and said duct presenting piston (25), and a hollow needle (28) passes through said block (33) and has an upper end portion received in said tubular member and a lower portion locked in said central core (6) and ending in an atomizer (29) opening in said combustion chamber, said fuel distributor device being controlled by a pneumatically actuated triggering mechanism disposed in an auxiliary chamber defined in said upper chamber between said central core and said block, and said liner having an outer surface presenting several series of longitudinal grooves, each groove (41) of a first series opening through an upper aperture (42) in said upper chamber, between said block (33) and said duct presenting piston (25), and through a lower aperture (43) in a central position in said lower chamber, each groove (44) of a second series opening in said lower chamber through an upper aperture (45) at a small distance below said lower aperture of said first series grooves and through a lower aperture (46) communicationg with said bottom chamber, each groove of a third series opening in said lower chamber through an upper aperture (51) and a lower aperture (50) and having a lower end in communication with the outside of the hammer drill, and each groove of a fourth series opening in said lower chamber through a lower aperture (55), at a small distance above the lower aperture of said first series grooves, and through an intermediate small aperture leading into said combustion chamber, and each said groove of said fourth series opening further through an upper aperture in said auxiliary chamber, and said percussion piston has a central portion provided with a circular groove (39) for bringing into communication said grooves of said first and second series when said percussion piston occupies a lower position, against said drill bit shank, so that said bottom chamber is fed with compressed air flowing through said annular duct forming part (15), said hollow piston (18), each of said air feeding ducts (26) and the grooves of said first and second series (41, 44) for rising said percussion piston towards said central core, in a upward stroke, while said combustion chamber is in free communication with the outside of the hammer drill through said third series grooves and said upper aperture of the latter, said percussion piston passing in the course of said upward stroke in a position in which it closes said upper aperture of the grooves of said second and third series—and in which said piston groove (39) brings into communication said lower apertures (55, 43) of the grooves of said first and fourth series, so that compressed air is fed into said combustion chamber and said auxiliary chamber for actuating said triggering mechanism so that fuel received by said distributor device through said central pipe, said tubular member and said hollow needle is injected in said combustion chamber through said hollow needle and said atomizer, whereafter said percussion piston continues its upward stroke and passes in a position in which it closes said lower aperture of said first series grooves for stopping the supply of compressed air to said auxiliary chamber and said combustion chamber, and in which said piston groove brings into communication said lower aperture of said fourth series grooves with said upper apertures of said third series grooves for connecting said auxiliary chamber to the outside of the hammer drill so as to stop injecting fuel in said combustion chamber, said upward stroke continuing until said bottom chamber is in communication with the outside of said hammer drill through said lower aperture of said third series grooves and until there builds up in said combustion chamber a pressure high enough to cause auto-ignition of the air and fuel mixture in said combustion chamber, so that a resulting explosion drives said percussion piston towards said drill bit shank in a downward stroke in the course of which said percussion piston first closes said lower aperture of said third series grooves for exhausting combustion gases resulting from said explosion through said third series grooves, and finally strikes said shank and again establishes communication between said lower aperture of said first series grooves and said upper aperture of said second series grooves through said piston groove, so as to feed again said bottom chamber with compressed air for a following cycle.

4,583,602

SHAPED CHARGE PERFORATING DEVICE

David B. Ayers, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 3, 1983, Ser. No. 500,756
Int. Cl.[4] E21B 43/11
U.S. Cl. 175—4.52 **3 Claims**

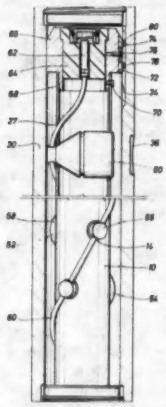
1. A shaped charge perforating apparatus, comprising:

an elongated tubular housing member having a plurality of recesses spirally spaced therealong;

an elongated tubular carrier member having a plurality of shaped charge mounting locations spirally spaced therealong;

a plurality of shaped charge units positioned in said mounting locations of said carrier member;

a length of detonator cord helically wound about said tubular carrier member for transferring detonation waves to said shaped charge units and for retaining said shaped charge units within said mounting locations; and



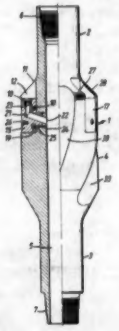
means for aligning said tubular carrier within said tubular housing member so as to align said shaped charge units with said spaced recesses along said housing member, said alignment means further comprising an elongated slot in said housing member; and biasing means affixed to said carrier member for engagement within said slot.

4,583,603

DRILL PIPE JOINT

André Doriéans, Le Perray-en-Yvelines, and Georges Fermaud, Nimes, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Jul. 24, 1985, Ser. No. 758,258
Claims priority, application France, Aug. 8, 1984, 84 12510
Int. Cl.[4] E21B *17/18*
U.S. Cl. 175—324 **8 Claims**



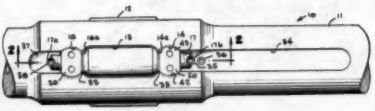
1. A drill pipe joint comprising a body elongated on a vertical axis, provided internally with an axial bore, and comprising upper and lower generally cylindrical end portions provided at their free ends with screw connection means for connection of the joint into a drill pipe, and an intermediate widened portion whose outside diameter is greater than the outside diameter of said upper portion and which has an upper face at its connection to said upper portion, said intermediate portion being provided with at least three cutouts, each of which cuts into said upper face and extends to said axial bore and which are regularly distributed circumferentially thereof relative to one another, and attached members each inserted into a respective said cutout, each attached member defining an upwardly directed internal passage opening at the lower end thereof into said bore and provided at the upper end thereof with a nozzle which is situated on a diameter intermediate the outside diameter of said intermediate portion and the outside diameter of said upper portion.

4,583,604

ROLLER REAMER WITH ROTATABLY POSITIONED BEARING BLOCK

Richard L. Greer, Houston, Tex., assignor to Hytech International, Inc., Houston, Tex.

Filed Oct. 19, 1984, Ser. No. 663,301
Int. Cl.[4] E21B *10/30, 17/10*
U.S. Cl. 175—346 **20 Claims**



1. In a roller reamer in which a reamer body is provided with at least one pocket, a roller in said pocket journalled on a shaft, and a pair of bearing blocks each having a shaft opening therein for supporting said shaft;

a recess in said body at each end of said pocket having a width transversely of said shaft greater than the length thereof along said shaft;

each said bearing block being in a said recess and each having a width transversely of said shaft and length along said shaft respectively substantially the same as the width and length of said recess;

interengaging means on said body and said bearing blocks for preventing movement of said bearing blocks outwardly of said reamer body; and

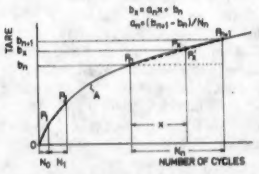
means for permitting placement of each said bearing block in a said recess comprising an entryway in said reamer body in communication with said recess having a width substantially the same as the length of said bearing block along the shaft opening therein.

4,583,605

ZERO-POINT CORRECTION DEVICE FOR WEIGHING MACHINE

Takashi Hirano, Kobe, Japan, assignor to Yamato Scale Company, Limited, Japan

Filed Feb. 21, 1985, Ser. No. 703,803
Int. Cl.[4] G01G *19/52, 13/14*
U.S. Cl. 177—50 **8 Claims**



1. A zero-point correction device for a weighing machine in which residual product is unavoidably left behind after unloading of said machine and the tare weight of the machine increases due to said residual product during successive weighing cycles along a known curve; said device comprising memory means for storing the tare weight b_n ($n=1,2,\ldots$) at each

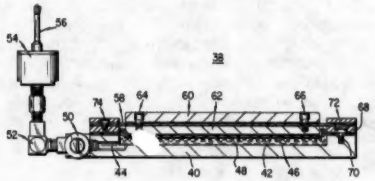
of a plurality of points P_n(n=1,2, . . .) sampled on said curve and the gradient a_n of a straight line connecting each point P_n to the next point P_{n+1} on said curve, means for counting the number of weighing cycles starting from each point to produce a count output x, arithmetic means for calculating a value representative of the tare weight b_x at a point on said curve between two points P_n and P_{n+1} from the above numerical values a_n, b_n and x in accordance with an equation, $b_x=a_nx+b_n$, and means for subtracting the output of said arithmetic means from a weight representative of the output weight of said weighing machine.

4,583,606

LOAD CELL WITH LATERAL RESTRAINING MEMBER

Narandranath Menon, Arlington, Tex., assignor to General Electrodynamics Corporation, Arlington, Tex.

Filed Feb. 6, 1984, Ser. No. 577,087
Int. Cl.[4] G01G *5/04*
U.S. Cl. 177—208 **1 Claim**



1. A load cell, comprising:

a rectangular base having a cylindrical open-faced cavity formed in one surface thereof;

a convoluted diaphragm disposed over said cavity to form a sealed chamber, said sealed chamber filled with hydraulic fluid;

a pressure transducer in communication with said sealed chamber for measuring pressure of said hydraulic fluid resulting from external forces applied to said diaphragm;

a piston having a first half and a second half and dimensioned to be disposed adjacent said diaphragm;

a layer of high tensile strength resilient material disposed between the first and second halves of said pistons and dimensioned to extend beyond the periphery of the first and second halves of said piston;

first means for clamping the first and second halves of said piston together to secure said resilient layer;

second means for clamping the periphery of said resilient layer on the surface of said base such that one of the first and second halves of said piston are disposed adjacent said diaphragm such that said resilient layer is disposed in a plane parallel to said diaphragm and the surface of said piston to provide tension forces to the periphery of said piston when said piston incurs forces on the surface thereof that are disposed at an angle to the normal thereof, said resilient layer clamped under maximum load such that said resilient layer is pre-deformed.

4,583,607

LOAD CELL ASSEMBLY WITH ADJUSTABLE STIFFNESS

Gerald C. Freeman, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

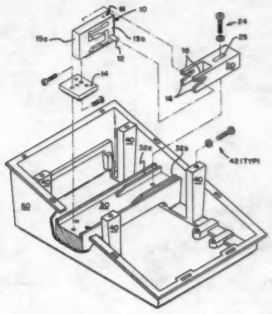
Filed Jun. 7, 1984, Ser. No. 618,275
Int. Cl.[4] G01G *21/28, 3/08*
U.S. Cl. 177—244 **6 Claims**

1. A load cell assembly having a predetermined overall stiffness, comprising:

(a) a parallelogram load cell having two rigid parallel legs connected by two parallel flexure members and having a particular stiffness greater than said predetermined overall stiffness;

(b) a base;

(c) a mounting plate positioned between and fixed to said base and to one of said parallel legs so that the other of



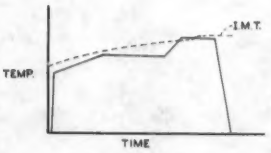
said legs is suspended above said base and is free to deflect under load, the resilience of said mounting plate being chosen in accordance with said particular stiffness so as to reduce the overall stiffness of said assembly to said predetermined stiffness.

4,583,608

HEAT TREATMENT OF SINGLE CRYSTALS

Thomas T. Field, East Killingly; Otis Y. Chen, Manchester; Arthur R. Geary, Meriden; Richard W. Salkeld, South Windsor, and Nicholas E. Ulion, Marlborough, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 6, 1983, Ser. No. 501,662
Int. Cl.[4] C22F *1/10*
U.S. Cl. 148—1 **3 Claims**



1. Method for heat treating single crystal superalloy articles for improved mechanical properties including the steps of

a. heating the articles to a temperature below but within about 25° F. of the incipient melting temperature for a period sufficient to achieve a significant amount of homogenization,

b. increasing the temperature of the articles to a temperature at least 5° F. above the incipient melting temperature thereby causing incipient melting in at least some of the articles,

c. holding the articles above the incipient melting temperature for a period of time sufficient to cause substantial healing of the incipient melting, and

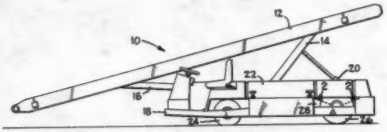
d. cooling the article at a rate in excess of about 100° F./min to below about 2000° F.

4,583,609

DRIVE AND BRAKE ASSEMBLY

James M. Anderson, Windermere, and William C. Dean, Orange City, both of Fla., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 5, 1984, Ser. No. 586,523
Int. Cl.[4] B60K 1/00
U.S. Cl. 180—65.5 3 Claims



1. In an aircraft belt loader having a frame, a drive arrangement to achieve a level frame which is below the center of wheel rotation, comprising:

an electric motor having an output shaft;

a mounting ring releasably secured to said motor;

a vertical support plate affixed to said frame and having a circular opening therein;

said circular opening having a center elevated above said frame;

a flange positioned in said opening and secured to said support plate;

first means releasably securing said ring to said flange;

a planetary reducer having an input connection for receipt of said output shaft;

said reducer having a rotatable output housing and a mounting plate rotatably supporting said drive;

second means releasably securing said mounting plate to said flange; and

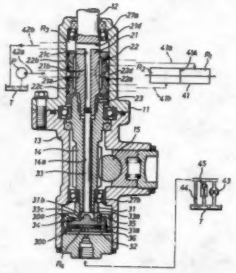
a ground-engaging drive wheel affixed to said housing.

4,583,610

POWER STEERING APPARATUS

Akira Hasegawa, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 21, 1984, Ser. No. 673,930
Claims priority, application Japan, Nov. 22, 1983, 58-220090
Int. Cl.[4] B62D 5/08
U.S. Cl. 180—143 9 Claims



1. A power steering apparatus for an automotive vehicle including a primary source of fluid under pressure, a secondary source of fluid under pressure responsive to the vehicle speed for supply of fluid under pressure in proportion to the vehicle speed, and a hydraulic power cylinder for providing a hydraulic power assist to the driver's steering effort applied to the steering wheel of the vehicle, the power steering apparatus comprising:

a housing;

an input member rotatably mounted in said housing;

an output member rotatably mounted in said housing and coaxially coupled at its inner end with the inner end of said input member for relative rotation;

a valve rotor rotatable integrally with said input member;

a valve sleeve rotatably mounted in said housing and arranged in surrounding relationship with said valve rotor, said valve sleeve being connected integrally with said output member to cooperate with said valve rotor for selectively directing fluid under pressure from said primary source to opposite ends of said power cylinder in response to relative rotation between said input and output members;

a cylindrical member fixed to the outer end of said output member;

an axial rod rotatably disposed in an internal axial bore in said output member and having an inner end fixed to the inner end of said input member and an outer end rotatable in the interior of said cylindrical member;

a piston axially slidably disposed in said cylindrical member and rotatable integrally with said cylindrical member;

a cam mechanism arranged between the outer end of said axial rod and said piston for permitting relative rotation of said input and output members upon the application of a predetermined torque to said input member; and

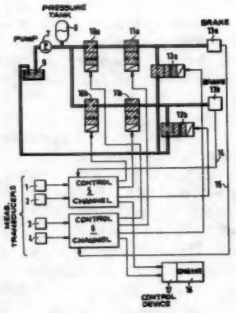
a pressure mechanism arranged to apply a hydraulic pressure from said secondary source to said piston for increasing the resistance to relative rotation between said input and output members in accordance with increase of the vehicle speed.

4,583,611

WHEEL SPIN PREVENTION SYSTEM

Rüdiger Frank, Gerlingen; Herbert Schramm, Stuttgart; Werner Kopper, Möglingen, and Dieter Wörner, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 28, 1984, Ser. No. 645,044
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1983, 3331297
Int. Cl.[4] B60Q 1/00; B60K 31/00
U.S. Cl. 180—197 20 Claims



1. System for preventing spinning of driven wheels of a vehicle having a propulsion engine, driven and undriven wheels on both sides of said vehicle and hydraulic brakes for the said respective wheels, in which there are provided first means for comparing these signals representative of the rotary speeds of said driven wheels with reference signals derived from the rotary speed of at least one said undriven wheel, second means for producing positive wheel slip signals (+λ) when comparison results produced by said first means fulfill a predetermined relation, third means, for activating the brake of a said driven wheel on a side of said vehicle in response to a said positive wheel slip signal (+λ) produced by said first means with respect to said driven wheel on said side of said vehicle and fourth means for reducing the output torque of said

engine in response to the production by said first means of positive wheel slip signals (+λ) with reference to said driven wheels on both sides of said vehicle, said system further comprising:

fifth means for producing negative wheel slip signals (−λ) in response to comparison results of said first means indicative of negative wheel slip;

sixth means responsive said first signals for comparing acceleration of the rotation of said driven wheel with respect to a reference value of acceleration to produce over-acceleration signals (+b) when the acceleration of the respective driven wheel exceeds said reference value of acceleration and for comparing deceleration of the rotation of said driven wheels with respect to a reference value of deceleration to produce over-deceleration signals (−b) when the deceleration of the respective driven wheel exceeds said reference value of deceleration, and

logic network circuit means and hydraulic brake pressure modifying means responsive thereto for producing a build-up of hydraulic pressure for operation of the brake of a said driven wheel in response to the simultaneous occurrence, with respect to said driven wheel of at least one of the following four pairs of signal conditions:

(a) presence of over-acceleration (+b) and of negative slip (−λ);

(b) presence of over-acceleration (+b) and of positive slip (+λ);

(c) presence of over-acceleration (+b) and absence of negative slip (−λ);

(d) presence of over-deceleration (−b) and of positive slip (+λ).

4,583,612

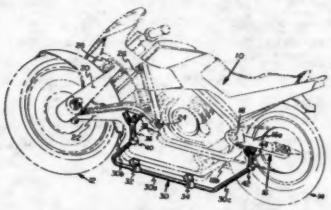
ANTI-PITCH SYSTEM FOR A MOTORCYCLE

James G. Parker, 102 S. Capitol St., Santa Fe, N. Mex. 87501

Filed Jul. 19, 1984, Ser. No. 632,602

Int. Cl.⁴ B62K *25/12*; B60G *21/04*

U.S. Cl. 180—227 **5 Claims**



1. In a motorcycle having a central chassis and a front wheel, and a rear swing arm suspension including a swing arm, and a one-sided front suspension including a control arm which is hinged to the chassis and which extends forwardly from the chassis around one side of the front wheel of the motorcycle, an anti-pitch system comprising a torsion rod connecting said control arm of said front suspension and said swing arm of said rear suspension, whereby unequal angular displacements of said control arm and said swing arm are resisted by torsional rigidity of said torsion rod.

4,583,613

THREE WHEEL MOTORCYCLE WITH REVERSE MECHANISM

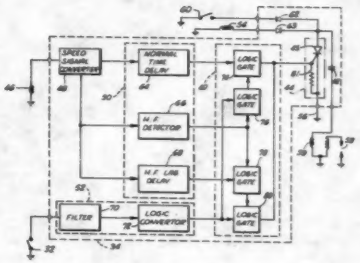
Hitoshi Nakayama, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 583,027

Claims priority, application Japan, Feb. 25, 1983, 58-29367

Int. Cl.⁴ B60K *28/10*

U.S. Cl. 180—283 **4 Claims**



1. A speed control system for a three wheeled vehicle having an engine and reverse gearing, comprising

means for detecting enablement of the reverse gearing;

means for detecting engine speed; and

means for disabling the engine from exceeding a preselected speed when the three wheeled vehicle is in reverse and the speed of the engine exceeds the preselected speed.

4,583,614

MOUNTING POWER UNIT IN FRONT WHEEL VEHICLE

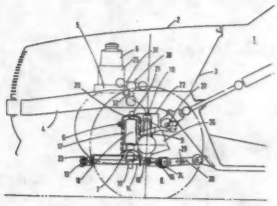
Robert J. Knight, c/o Dunlop Limited of 2 Parade, Sutton Coldfield, West Midlands, England

Filed Feb. 18, 1983, Ser. No. 467,902

Claims priority, application United Kingdom, Feb. 22, 1982, 8205102

Int. Cl.⁴ B60K *5/04*

U.S. Cl. 180—295 **10 Claims**



1. A front wheel drive vehicle, comprising:

(a) a body; (b) a front-mounted power unit; (c) front suspension assemblies;

(d) a steering assembly, said suspension assemblies and said steering assembly being mounted on said power unit to form a combined assembly; and

(e) flexible mountings connected directly between said body and said combined assembly, whereby said body is resiliently mounted and vibration forces from said power unit and the front wheels of the vehicle are attenuated in said combined assembly and said flexible mountings.

4,583,615

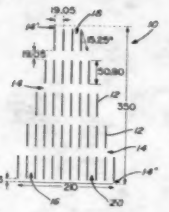
METHOD AND APPARATUS FOR CONTROLLING NOISE

Maurice Amram, P.O. Box 6079, Succ. A, Montreal, Quebec H3C 3A7, Canada

Continuation-in-part of Ser. No. 350,765, Feb. 22, 1982, abandoned. This application Feb. 23, 1984, Ser. No. 582,770

Int. Cl.⁴ B64F *1/26*

U.S. Cl. 181—210 **15 Claims**



1. A device adapted to reduce noise of a desired frequency, comprising a plurality of elements arranged in a plurality of rows to provide at least one passageway extending between said rows, the spacing of said elements from each other being arranged to cause a phase lag in noise of said desired frequency passing through said passageway by 180°, said elements being arranged to minimize diffraction of sound waves passing therethrough.

4,583,616

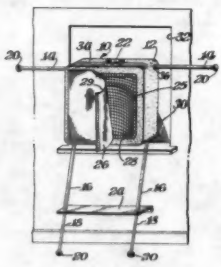
PORTABLE FIRE ESCAPE

Ralph T. Baker, New Castle, Del., assignor to Baker Safety Equipment, Inc., New Castle, Del.

Filed May 31, 1985, Ser. No. 740,199

Int. Cl.⁴ A62B *1/20*

U.S. Cl. 182—49 **12 Claims**



1. Fire escape apparatus for exiting a building through an opening in said building, the apparatus comprising a first, supporting entry ring member and a mesh tube attached at one of its ends to said first supporting entry member, said mesh tube being substantially longer than the building height from which escape is necessary, and a second, exit-opening support ring member attached to the other end of said mesh tube, said first supporting member being substantially a rectangular ring affixed within a generally rectangular frame casing having a top, a bottom and two sides, said casing being generally in the shape of a suitcase, said top having a handle affixed thereto, said top of said frame having at least two horizontal elongate recesses therein, in which horizontal recesses are housed extensible, elongate arm-like members, said sides of said frame each having at least one generally vertical elongate recess therein, in which vertical recesses are housed extensible, elongate leg-like members said frame having front and rear closure flaps and closure means which enable closure of and encasement within said frame of said first supporting member, said attached mesh tube in a folded condition and said second, exit-opening support ring member,

thereby, when closed, there is provided compact and portable fire escape means,

whereby, when needed, a user places said apparatus adjacent an opening such as a window of a building from which escape is necessary, extends said arm-like and leg-like members, the former to their fully-extended length and the latter to a desired length to accomodate the height of said window, places the rear of said frame adjacent said window and opens said rear flap, allowing it to extend outwardly from said window, and then opens said front flap and deploys said second support member and mesh tube outwardly and downwardly through said window, providing said user means for escaping said building through said mesh tube.

4,583,617

RESCUE BASKET

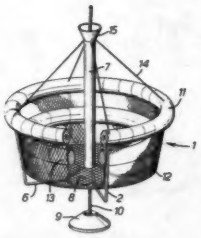
Per Berger, N-1154, Oslo 1, Norway

Filed Nov. 26, 1984, Ser. No. 675,243

Claims priority, application Norway, Dec. 6, 1983, 834473

Int. Cl.⁴ B63C *9/00*

U.S. Cl. 182—142 **2 Claims**



1. A marine rescue basket having a bottom and a peripheral wall, a central downwardly opening recess in said bottom, a centrally arranged tubular means fastened to and extending upwardly from the said bottom, the said tubular means forming a guide for a cable extending through the tubular means and beyond the bottom and being connected to a weight means having such dimensions that it may be totally received in said recess, but cannot pass through said tubular guide means, the other end of the cable being adapted to be connected to structure such that the cable acts as a lowering and retrieval cable for said marine rescue basket, the said tubular guide means being of such a height above the said bottom that a slackening of said cable will result in the cable bending outwardly and eventually hitting the outside of said peripheral wall, the tubular guide means being shrouded with stays extending from said peripheral wall.

4,583,618

COORDINATED STAGE SYSTEM WITH ARTICULATE MEANS

Rudi M. Zimmerman, 2879 Ridgeway Ave., Rochester, N.Y. 14626

Filed Nov. 15, 1984, Ser. No. 671,593

Int. Cl.⁴ E04G *5/08*

U.S. Cl. 182—223 **2 Claims**

1. A coordinated stage system for supporting a person thereon comprising:

(a) first and second longitudinal stages, each of said first and second stages having:

(i) a pair of diametrically opposed longitudinal side rails, and

(ii) a deck supported by said pair of diametrically opposed longitudinal side rails,

(b) articulate means for pivotally joining said first and second stages in line and in series about a common axis perpendicular to said pair of diametrically opposed longitudinal rails of said first and second stages,

(c) said articulate means includes

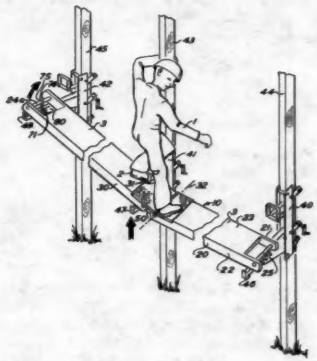
(i) a first rung in said first stage coaxially disposed in said common axis of said articulate means,

(ii) said first rung being fixed between said pair of diametrically opposed longitudinal side rails at one end of said first stage,

(iii) extension bracket means fixed to said second stage and extending therefrom in cooperative relationship with said first rung of said first stage for pivotally coaxially coupling said second stage to said first stage;

(iv) said extension bracket means includes a pair of cradle support members positioned in cradling cooperative relationship to said first rung of said first stage for said pivotal movement of said first and second stages about said common axis, and

(v) said pair of cradle support members include a locking means disposed above said common axis and above said first rung of said first stage when said first rung of said first stage is cradled within said pair of said cradle support members for pivotally locking said first rung of said first stage to said pair of said cradle support members so that said locking means and said rung of said first stage are visible to said person on said coordinated stage system.



4,583,619

AUTOMATIC GATE FOR CHECKOUT LANE

Raymond A. Fry, P.O. Box 86482, San Diego, Calif. 92138

Filed Aug. 19, 1983, Ser. No. 524,745

Int. Cl.[4] A47F 9/04

U.S. Cl. 186—59 18 Claims

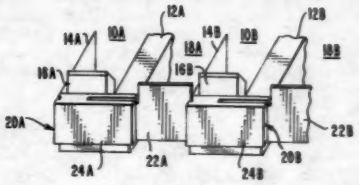
1. A system for closing checkout lanes comprising:

(a) a gate having a first state for preventing egress from a checkout lane and a second state allowing egress from said checkout lane;

(b) a cash register adjacent to said checkout lane and having a lock to lock said cash register closed; and

(c) a lock actuator for actuating and deactuating said lock; and

(d) a gate controller uniquely associated with said gate and uniquely associated with said lock and operable to cause said gate to automatically assume its first state upon actuation of said lock and operable to cause said gate to automatically assume its second state upon deactuation of said lock.



4,583,620

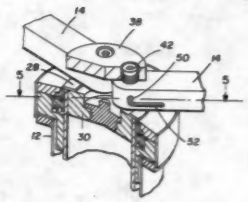
VEHICLE HOIST

Burton D. Bishop, Salisbury, Md., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 22, 1979, Ser. No. 51,326

Int. Cl.[4] B60S 13/00

U.S. Cl. 187—8.75 4 Claims



1. A vehicle hoist including a hoisting mechanism, a plurality of support arms adapted for engaging the underside of a vehicle to be hoisted, each of said arms extending cantilevered outward from its inboard end swivel mounted on a wear plate of said hoisting mechanism, and a cover plate secured superposed to said wear plate and over the inboard end of said arms, said cover plate cooperating with the wear plate on said hoisting mechanism to define a swivel cavity for swivel of said arms therebetween, and adjustment means operable with said arms in position for varying the height spacing of said swivel cavity to a predetermined clearance spacing for each of said arms and including means comprising an adjustably settable spacer tube in association with said arms to determine the vertical spacing between said cover plate and said wear plate to permit a plurality of adjustments, each of which is selectively operable for varying the swivel cavity spacing for an individual of said arms.

4,583,621

DIFFERENTIATED ACTION OSCILLATION DAMPING DEVICE

Giorgio Tangorra, Monza, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Mar. 19, 1984, Ser. No. 590,749

Claims priority, application Italy, Apr. 8, 1983, 20502 A/83

Int. Cl.[4] F16F 7/12

U.S. Cl. 188—67 5 Claims

1. An oscillation damping device having a rigid case and a rigid stem axially movable relative to the rigid case, said device having a differentiated sliding action relative to two directions of axial movement of said rigid stem relative to said rigid case, said device comprising:

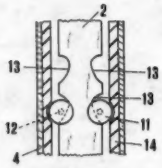
a plurality of viscoelastic races;

a plurality of metallic races opposed to said viscoelastic

races, said metallic races comprising grooves, said grooves having a deepest part and a shallowest part;

a plurality of rigid rolling elements each having at least one roller with at least one axially projecting rod, said axially projecting rod having a smaller radius than a radius of said roller;

said projecting rod being disposed to slide on one said groove of said metallic races and said roller being disposed to roll on one said viscoelastic race;



whereby when said stem is moved on one axial direction, said roller is disposed in said deepest part of said one groove to facilitate said sliding action and when said stem is moved in an opposite axial direction, said roller rolls on said one viscoelastic race to become disposed in said shallowest part of said one groove to inhibit said sliding action by viscoelastic interference of said one viscoelastic race to apply a strong braking effect on said axial movement.

4,583,622

ADJUSTING DEVICE FOR VEHICLE BRAKES

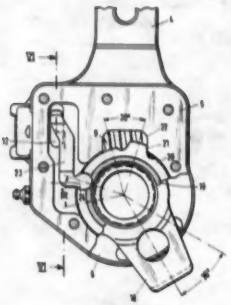
Wilfried Ebbinghaus; Erwin Henze, and Wilhelm Gross, all of Wiehl, Fed. Rep. of Germany, assignors to Bergische Achsenfabrik Fr. Kotz & Sohne, Wiehl, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 670,299

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409454

Int. Cl.[4] F16D *65/52*

U.S. Cl. 188—79.5 K **2 Claims**



1. An automatic adjusting device for vehicle brakes comprising a brake lever movable to effect rotation of a brake actuating shaft, said brake lever having a housing portion, adjusting means located in said housing portion for adjusting the position of the brake actuating shaft in response to brake wear, said adjusting means comprising a worm wheel mounted on the brake actuating shaft for joint rotation therewith and a worm for rotating said worm wheel in response to movement of the brake actuating shaft in excess of a predetermined amount, clutch means actuatable to provide for rotation of said worm in response to movement of said brake actuating shaft in excess of said predetermined amount to thereby effect rotation of said worm wheel, a drive member for actuating said clutch means in response to movement of the brake actuating shaft in excess of said predetermined amount, said drive member being movable upon movement of said brake lever and having a predetermined stroke upon completion of which said clutch is actuated, and stop means for limiting the stroke of said brake lever to said predetermined stroke of said drive member to prevent breaking thereof, said stop means comprising a stationary lever fixed to a stationary part of the motor vehicle and having a portion projecting into said housing portion of said brake lever, said portion of said stationary lever having a cam stop thereon and said housing portion being provided with a recess which said cam stop engages, the dimensions of said cam stop and recess defining the maximum stroke of said brake lever.

4,583,623

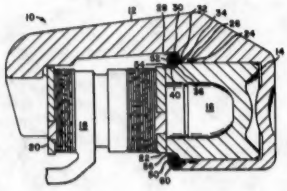
HEAT SHIELD ELEMENT FOR A BRAKE

Irving R. Ritsema, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Oct. 18, 1984, Ser. No. 662,107

Int. Cl.[4] F16D *65/84*

U.S. Cl. 188—264 G **7 Claims**



1. A heat shield for a disc brake assembly having a piston movably carried within a caliper housing bore such that movement of the piston in one direction during braking imparts movement to a friction element which is engageable with a rotating member to convert kinetic energy of the rotation member into thermal energy of the friction element and increasing the temperature of the friction element, the heat shield cooperating with the piston to substantially reduce the thermal energy transferred from the friction element to a boot seal engaging the piston, the piston cooperating with the housing and the friction element to define a cavity for receiving the boot seal and heat shield, said heat shield comprising a retainer ring having a central opening receiving a correspondingly shaped portion of said piston therein, the circumfrence of the central opening being fitted about the correspondingly shaped portion of the piston in order to provide a mounting of said retainer ring upon said piston so that said ring is spaced from said friction element and prevents an end of said boot seal from engaging said friction element, characterized in that said heat shield further comprises a light weight, flexible heat shield element having a center opening coaxial wih said central opening and receiving the piston therein, the heat shield element being disposed between said retainer ring and boot seal in order to provide an insulating material therebetween in order to protect the boot seal from thermal energy dissipated from said friction element, said flexible heat shield element being retained axially in position by said retainer ring.

4,583,624

FLUID SYSTEM WITH SELECTIVE DIFFERENTIAL PRESSURE CONTROL

William W. Blake, Kewanee, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 10, 1984, Ser. No. 679,723

Int. Cl.[4] F16D *25/11*; F15B *13/06*

U.S. Cl. 192—3.22 **29 Claims**

1. A fluid system for use in a vehicle, comprising:

a source of pressurized fluid;

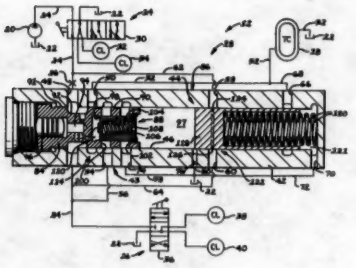
a distribution conduit connected to the source;

means for restricting the flow of fluid in the distribution

conduit and establishing a difference in pressure of the fluid in the distribution conduit upstream and downstream of the flow restricting means;

a first force transmitting mechanism connected to the distribution conduit upstream of the flow restricting means;

a second force transmitting mechanism connected to the



distribution conduit downstream of the flow restricting means; and

means for selectively interconnecting the distribution conduit upstream and downstream of the flow restricting means in response to the pressure level of the fluid in the distribution conduit reaching a predetermined pressure level.

4,583,625

TEMPERATURE RESPONSIVE FLUID COUPLING DEVICE

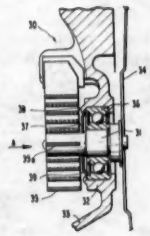
Masaharu Hayashi, and Masato Itakura, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 28, 1984, Ser. No. 655,615

Claims priority, application Japan, Sep. 28, 1983, 58-151241[U]

Int. Cl.⁴ F16D *35/00, 43/25*

U.S. Cl. 192—58 A **5 Claims**



1. A temperature responsive fluid coupling device for driving a cooling fan for an internal combustion engine comprising an input coupling member driven by said engine, an output coupling member having a hollow interior rotatably mounted on said input coupling member, a rotor secured to said coupling member and located in said hollow interior of said output coupling member, a partition plate dividing said hollow interior into a working chamber accommodating said rotor therein, and a reservoir chamber for a viscous fluid, a fluid return passage formed in said partition plate for permitting flow of said viscous fluid from said reservoir chamber to said working chamber, a pumping passage disposed in said output coupling member radially outwardly of said partition plate, and pumping means associated therewith for directing said viscous fluid from said working chamber to said reservoir chamber, a shaft rotatably supported in said output coupling member coaxially with said input coupling member by means of a sealed bearing, a valve plate secured to one end of said shaft for rotation on said partition plate to control the fluid communication through said fluid return passage therein a bimetal spiral spring secured at the outer end thereof to said output coupling member so as to be subjected to changes in temperature, and secured at the inner end thereof to the other end of said shaft, and cover plate means secured to one of said output coupling member and said shaft and positioned in front of said sealed bearing outside of said output coupling member and having moisture passage means adjacent said output coupling member.

4,583,626

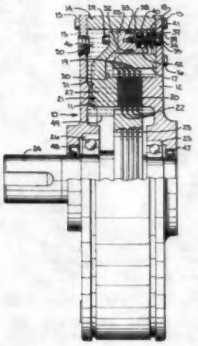
CENTRIFUGALLY ACTUATED WET PLATE CLUTCH

Dale R. Spridco, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed Nov. 21, 1983, Ser. No. 553,852

Int. Cl.⁴ F16D *25/063*

U.S. Cl. 192—70.25 **4 Claims**



1. A clutch for connecting driving and driven mechanisms, comprising:

a rotatable housing adapted to be connected to said driving mechanism, said rotatable housing having a radial cavity adapted to be partially filled with a fluid;

clutch plates within said radial cavity and operatively connected to said rotatable housing and said driven mechanism;

a piston in said cavity having a net piston surface opposing said clutch plates which causes said piston to engage the clutch plates under the influence of centrifugal pressure generated in said fluid by rotation of said housing;

a ring member in said radial cavity mounted to said housing thereby defining an annular channel adjacent the outer perimeter of said radial cavity;

an annular plunger portion of said piston which is slidably mounted and sealed on its inside and outside diameters in said annular channel thereby providing said net piston surface opposing said clutch plates;

wherein said housing has spaced front and rear end plates and a cover spanning the plates;

a ball bearing and a seal mounted in each of said front and rear end plates;

an output shaft rotatably mounted in said ball bearings and seals and adapted to be connected to said driven mechanism, said output shaft being connected to a set of said clutch plates which are interleaved with another set of said clutch plates connected to said housing;

an annular plate adjacent said front end plate in said annular channel which is slidably connected to said annular plunger;

a compression spring biased between said annular plunger and said annular plate; and

means for adjusting the axial position of said annular plate, whereby the spring force biasing said piston away from said clutch plates can be adjusted.

4,583,627

VEHICLE/ENGINE OPERATIONAL PARAMETER RESPONSIVE CLUTCH CONTROL

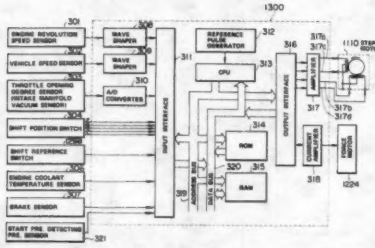
Haruyoshi Kumura, Yokohama; Sigeaki Yamamuro, Zushi; Yoshikazu Tanaka, Yokohama; Hiroyuki Hirano, and Keiju Abo, both of Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 20, 1983, Ser. No. 544,066

Claims priority, application Japan, Oct. 22, 1982, 57-184628; Sep. 6, 1983, 58-162651

Int. Cl.[4] B60K *41/02*

U.S. Cl. 192—0.076 **6 Claims**



1. A control system for a hydraulic automatic clutch of a vehicle having an engine with a throttle which opens in degrees, comprising:

a hydraulic clutch having an output shaft;

an engine revolution speed sensor means for generating an engine revolution fluid pressure signal indicative of the revolution speed of the engine;

a vehicle speed sensor means for generating a vehicle speed indicative signal indicative of the vehicle speed;

a starting valve means having a start fluid pressure regulating state and a complete engagement fluid pressure regulating state, said starting valve means being coupled with said engine revolution speed sensor means for generating a start fluid pressure in response to said engine revolution fluid pressure signal when said starting valve means is in said start fluid pressure regulating state, said starting valve means increasing fluid pressure from said start fluid pressure to generate a complete engagement fluid pressure when said starting valve means is in said complete engagement fluid pressure regulating state, said start fluid pressure and said complete engagement fluid pressure being supplied to said hydraulic clutch;

a complete engagement control means coupled with said starting valve means for rendering said starting valve means operable in said complete engagement fluid pressure regulating state when said complete engagement control means is put into a predetermined state;

control means including means for generating a predetermined vehicle speed indicative signal indicative of a predetermined vehicle speed, said control means being responsive to said vehicle speed indicative signal for putting said complete engagement control means into said predetermined state when said vehicle speed indicative signal increases beyond said predetermined vehicle speed indicative signal.

4,583,628

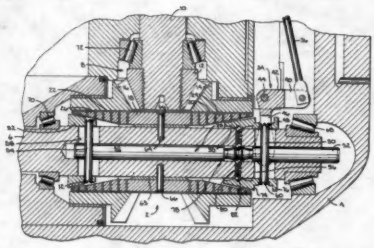
MARINE DRIVE EXPANDING CLUTCH

Daniel F. McCormick, Oshkosh, Wis., assignor to Brunswick Corp., Skokie, Ill.

Filed Dec. 29, 1983, Ser. No. 566,491

Int. Cl.[4] F16D *13/14*

U.S. Cl. 192—76 **13 Claims**



1. Clutch apparatus for a marine drive lower gear case, comprising:

a propeller shaft rotatably mounted in said lower gear case to produce axial thrust;

drive gear means in said lower gear case for driving said propeller shaft;

clutch means connected to said propeller shaft and movable to engage said drive gear means along an axially extending friction face engagement surface for driving said propeller shaft;

wherein said clutch means includes clutch face means movable radially into engagement with said drive gear means;

wherein said drive gear means includes rotatable driven gear means concentric with said propeller shaft, and wherein said clutch face means is between said propeller shaft and said driven gear means and is radially movable outwardly away from said propeller shaft to engage the concentric inner facing surface of said driven gear means.

4,583,629

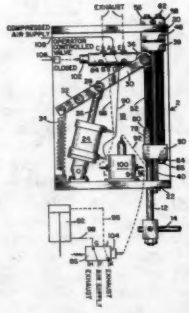
AIR OPERATED PRESS GUARD

William P. White, c/o Mechanical Applications, Inc., Wiscasset, Me. 04578

Filed Feb. 23, 1984, Ser. No. 582,827

Int. Cl.[4] F16P *3/16*

U.S. Cl. 192—130 **7 Claims**



1. The combination of an air operated press and an air controlled press guard,

a press guard supporting structure mounted on said press,

a vertically movable probe carried by said structure,

means comprising an air cylinder and piston for moving said probe down and up,

means comprising an air cylinder and piston for operating said press,

means comprising interconnected air lines and associated air pressure operated valves connected to said both said air cylinders whereby said press can be operated only when said probe is at the end of its downward movement.

4,583,630

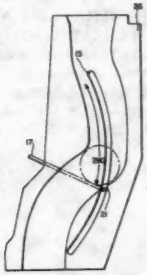
COIN CHUTES FOR A COIN APPARATUS

Bernard Kalishman, 19430 NE. 23rd Ave., North Miami Beach, Fla. 33180

Filed Sep. 25, 1984, Ser. No. 654,221

Int. Cl.[4] G07F *1/04*

U.S. Cl. 194—227 **8 Claims**



1. In a coin apparatus comprising a feeler normally occupying a retracted position and movable away from retracted position, an indexing stop movable away from a retracted position in which it is engageable by the feeler to limit movements of the feeler to a position in which it allows a full stroke of the feeler, said stop being biased to return to retracted position, coin-actuated means for advancing said stop in amounts proportional to coin values, means for holding the stop in advanced position against the return bias, and means for releasing the stop for return under the bias to its retracted position, said coin-actuated means comprising a plurality of coin chutes having a coin path with a trip wire pivoted to swing on an axis and having a finger at its free end extending across said coin chutes wherein a coin dropping in one of said chutes swings said trip wire through a given angle corresponding to the value of said coin and, upon return, indexes said indexing stop, the improvement comprising: means for minimizing the value of said given angle whereby the values of said coins and said indexes are reduced.

4,583,631

APPARATUS FOR POSITIONING AND CLAMPING WORK CLAMP PALLET FOR MACHINE TOOLS

Keitaro Yonezawa, and Sohei Yamada, both of Itamishi, Japan, assignors to Aioi Keiki K.K., Hyogoken, Japan

Continuation of Ser. No. 397,167, Jul. 12, 1982, abandoned. This application Apr. 23, 1985, Ser. No. 725,165

Claims priority, application Japan, Aug. 4, 1981, 56-116643[U]

Int. Cl.[4] B65G *47/06*

U.S. Cl. 198—345 **9 Claims**

1. In a system wherein a pallet having at least one workpiece removably clamped thereon is removably clamped to a worktable of a machine tool which performs a machining operation on the workpiece, the improved device for removably clamping the pallet to the machine worktable comprising:

(a) a bed plate attached to the machine worktable;

(b) a plurality of pallet supporting blocks attached to an upper surface of the bed plate at spaced apart locations, each pallet support block defining an upper pallet supporting surface;

(c) a plurality of transfer rails attached to the upper surface of the bed plate and extending in generally parallel directions;

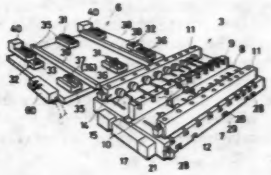
(d) a plurality of spring biased castor means attached to the pallet in a plurality of grooves formed in the underside of the pallet, the grooves extending generally parallel to the transfer rails, the castor means being movable between extended and retracted positions and located such that, in their extended position, they roll along the transfer rails to facilitate the transfer of the pallet between the worktable and a pallet changing table, each of the castor means comprising:

(i) an elongated U-shaped member slidably retained in each of the grooves;

(ii) coil spring biasing means interposed between the U-shaped member and the pallet so as to bias the U-shaped member to its extended position; and,

(iii) a plurality of castors rotatably attached to each U-shaped member;

(e) a pair of stops attached to the bed plate such that they contact an edge of the pallet to position the pallet in a direction parallel to the transfer rails;



(f) a positioning device attached to the bed plate so as to accurately position the pallet on the bed plate;

(g) clamp means contained within each pallet supporting block and engaging the pallet so as to clamp the pallet to the pallet supporting blocks so as to overcome the force of the spring bias and move the castor means to their retracted position such that a lower surface of the pallet contacts the pallet supporting surfaces of the pallet supporting blocks thereby supporting the pallet a predetermined distance above the bed plate, the clamp means comprising:

(i) a clamping chamber defined by the pallet supporting block;

(ii) a clamping piston slidably movable in the chamber;

(iii) a clamping arm attached to the clamping piston and extending exteriorly of the pallet supporting blocks through pallet supporting surface, the distal end of the clamping arm engaging a slot defined by the pallet; and,

(iv) passage means defined by the bed plate to supply a pressurized fluid to the chamber to cause the clamping piston and the clamping arm to move in a generally vertical direction so as to clamp and unclamp the pallet; and,

(h) a source of pressurized hydraulic fluid to supply hydraulic fluid to the clamping chambers.

4,583,632

FEEDING ASSEMBLY FOR FEEDING BOOKS OR BOOK BLANKS AT REGULAR INTERVALS ONTO A CONVEYOR BELT

Hannu P. K. Lyyra, Rintamamiehentie 1 A 11, 06100 Porvoo 10, Finland

Filed Mar. 15, 1984, Ser. No. 589,960

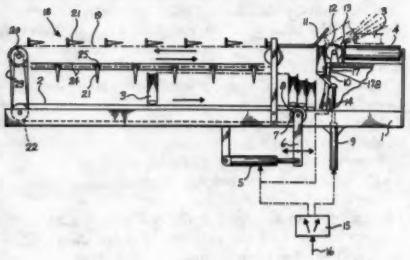
Claims priority, application Finland, Mar. 31, 1983, 831111

Int. Cl.[4] B65G *47/24*

U.S. Cl. 198—407 **20 Claims**

1. A feeding assembly for feeding books or book blanks at

regular intervals onto a first conveyor belt leading to a further processing apparatus of books or book blanks, such as a packing machine or a three-way trimmer and cover binding line of book blanks, said assembly comprising a second intermittently operated conveyor belt perpendicular to the first conveyor belt, characterized in that said second conveyor belt (2) is located below the level of said first conveyor belt (4) by at least the width of said books (3); a vertically displaceable hoist (10) engageable below the bound side edge of a book or book blank



and positioned at the terminal end of said second conveyor belt (2); a guide (11) at the top of the climb path of said hoist (10); and a feed roller (12) located adjacent to a side edge of said first belt (4) and rotatable about an axis parallel to the conveying direction of said first belt (4); said guide (11) and said roller (12) being positioned to define a feed gap therebetween and to cause a book raised by said hoist (10) to fall down on top of said roller (12) and be transferred by said roller (12) directly onto said first belt (4).

4,583,633

CONVEYOR FOR PACKING MACHINES

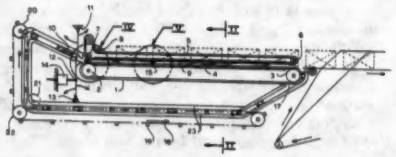
Horst Spiegel; Dieter Schubert, and Manfred Woelk, all of Dresden, German Democratic Rep., assignors to VEB Kombinat Nagema, Dresden, German Democratic Rep.

Filed Jul. 12, 1984, Ser. No. 631,937

Claims priority, application German Democratic Rep., Jul. 22, 1983, 2533086

Int. Cl.⁴ B65G *37/00, 47/26*

U.S. Cl. 198—459 **7 Claims**



1. A conveyor for feeding goods to a continuously operating, horizontal packing machine having a programming shaft, comprising conveying means for conveying goods positioned thereon; a plurality of means for engaging individual goods on said conveying means and positioned at an adjustable distance from each other; said conveying means including an endless conveyor band continuously running with a speed corresponsing to the speed of the packing machine, said conveyor band having a beginning portion and a discharge portion; storage means for storing said engaging means, said storage means being positioned at said beginning portion and including locking elements controllable by said programming shaft to open or close said storage means to discharge therefrom said engaging means at predetermined intervals from each other onto said conveyor band; clamping means including two endless clamping belts arranged above said conveyor band and being spaced therefrom and operative for retaining said engaging means at predetermined intervals on said conveyor band, said storage means further including an oscillating pusher controllable by said programming shaft and adapted to push said engaging means from said storage means into a space between said clamping belts and said conveyor band; and means for returning said engaging means from said conveyor band to said storage means, said returning means being positioned below said conveyor band.

4,583,634

STEP-TYPE PRODUCTION LINE AND METHOD OF OPERATING SAME

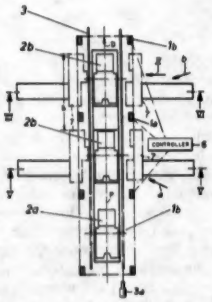
Josef Kraus, Neusäss, and Franz Jaufmann, Wehringen, both of Fed. Rep. of Germany, assignors to Kuku Schweissanlagen and Roboter GmbH, both of Augsburg, Fed. Rep. of Germany

Filed Jul. 27, 1983, Ser. No. 517,827

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228378

Int. Cl.⁴ B65G *43/08*

U.S. Cl. 198—341 **9 Claims**



1. A production line for working on a succession of workpieces of at least two different workpiece types in respective different ways, the line comprising:

transport means defining a longitudinal path for carrying and displacing the succession of workpieces in a lower position in longitudinal stop-and-go steps through a succession of stations generally longitudinally equispaced along the path;

means including machines capable of working in one of the respective ways at some of the stations and machines capable of working in the other way at others of the stations for working on the workpieces of the respective types as same are stopped between transport steps and in an upper position above the lower position and out of contact with the transport means; and

lifter means at each of the stations for raising the workpieces therein when of the type corresponding to the respective machine into the upper position and when of the other type into an intermediate position between the upper and lower positions and out of contact with the transport means and with the respective machine, whereby when a workpiece is in a station of a machine not capable of working on it in the respective way the workpiece is merely held off the transport means in said intermediate position between transport steps.

4,583,635

ARRANGEMENT FOR ALIGNING AND SUPPLYING FLAT PRISMATIC ARTICLES

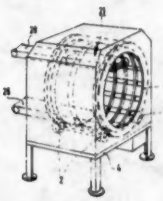
Bernhard H. Timmer; Willem A. van der Hoef, both of Baarn, and Martinus T. Beukeboom, Huizen, all of Netherlands, assignors to Polygram B.V., Baarn, Netherlands

Filed Sep. 4, 1984, Ser. No. 647,197

Claims priority, application Netherlands, Sep. 15, 1983, 8303182

Int. Cl.[4] B65G *29/02, 37/00, 47/14, 47/38*

U.S. Cl. 198—382 6 Claims



1. An arrangement for aligning and supplying flat prismatic articles, such as tape cassettes or parts thereof, comprising

a frame,

a rotatable drum having an axis arranged in a horizontal position, mounted in said frame for rotation about said axis, and having at least at one end an at least partly open end face to permit articles, to be aligned, to be supplied to the lowermost part of the drum; and a number of substantially radially extending partition walls formed as angle profiles, provided on an inner side of the drum, arranged such that upon rotation of the drum said partition walls take along articles from the lowermost part of the drum to the uppermost part of the drum where said articles fall from the drum, and

a further transport device for receiving articles which fall from said uppermost part of the drum,

characterized in that said angle profiles are arranged, viewed in the direction of the circumference of the drum, at equal relative distances which are slightly larger than a dimension of the articles, said angle profiles having a height slightly larger than the thickness of the articles,

the inner wall of the drum comprises a number of separation walls arranged at equal relative distances corresponding to the width of the articles, in planes perpendicular to said axis, so as to form a number of rows of compartments for the articles,

each of said compartments comprises an ejector arranged for engaging the respective angle profile and

means for moving the ejectors of the respective compartments away from the respective angle profile when said respective angle profile is located substantially at the highest point of the drum, thereby ejecting articles present in the compartments such that said articles fall onto said further transport device.

4,583,636

DEVICE FOR WEIGHT CLASSIFICATION OF CROPS

Adrianus W. Tas, Burgemeester Winkellaan 3, 2631 HB Nootdorp, Netherlands

Filed Nov. 8, 1983, Ser. No. 550,077

Claims priority, application Netherlands, Nov. 9, 1982, 8204328

Int. Cl.[4] B07C *5/18*

U.S. Cl. 198—504 5 Claims

1. A device for weight classification of products comprising:

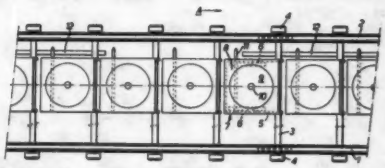
an endless conveying member;

a series of pick-up members, each including a product-holding plate, pivotally affixed to said conveying member;

a series of parallel first pivotal shafts each connected to and extending transversely across said conveying member;

bracket means pivotally attached to each of said first pivotal shafts and extending under said plate of each of said pick-up members for supporting an underside of said plate;

weighing means including a weighing platform positioned below said conveying member, each of said pick-up members being movable by said conveying member in succession to coplanarly abut a top side of said weighing platform;



a pair of ridge members affixed to and extending downward from said plate to periodically engage said weighing platform; and

a series of parallel second pivotal shafts each extending transversely across one of said bracket means and pivotally coupled to said ridge members such that said plates may pivot relative to said bracket means;

said plates, first pivotal shafts, bracket means, ridge members, and second pivotal shafts being arranged such that a center of each particular pick-up member is between those first and second pivotal shafts extending transversely across that particular pick-up member.

4,583,637

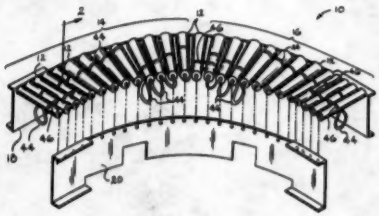
CONVEYING APPARATUS

William B. Ferguson, Perrysburg, Ohio, assignor to Roe Incorporated, Perrysburg, Ohio

Continuation of Ser. No. 432,315, Sep. 30, 1982, abandoned. This application Feb. 1, 1985, Ser. No. 698,732

Int. Cl.[4] B65G *13/04*

U.S. Cl. 198—787 2 Claims



1. In a live roller conveyor having a plurality of closely spaced rollers angularly disposed in a common plane to define an arcuate conveying line, the improvement comprising:

a group of angularly disposed rollers including a first portion located along a first arcuate path and a second portion different from said first portion and located along a second arcuate path spaced from said first arcuate path; and

a drive means for rotatably driving said group of angularly disposed rollers, said drive means including a main drive shaft, an auxiliary drive shaft disposed in laterally spaced apart parallel relation to said main drive shaft, means for driving said auxiliary drive shaft from said main drive shaft, and separate means to individually drive each of said rollers, said main drive shaft coupled by said separate means to individually drive said first portion of said group of rollers and said auxiliary drive shaft coupled by said

separate means to individually drive said second portion of said group of rollers.

4,583,638

PRESSURE-TIGHT VESSEL FOR THE STORAGE OF HYDROGEN IN A METAL MATRIX BODY

Otto Bernauer, Weinstadt, and Robert Wagner, Fellbach, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 16, 1984, Ser. No. 661,430

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337754

Int. Cl.[4] F17C *11/00*

U.S. Cl. 206—0.7 11 Claims

1. A pressure-tight vessel for the storage of hydrogen in a metal matrix body, wherein the matrix body is arranged within the vessel in an envelope tube, of which the outside diameter before activation of the matrix body is less than the inside diameter of the vessel, and disc means filling the tube cross-section rest against the end faces of the matrix body for displacement under resistance outwards within the tube.

4,583,639

PACKAGED REPLACEMENT WINDOW

John Fedick, 24 Saddleback Trail, Rochester, N.Y. 14624, and Francis J. Schweitzer, Jr., 14 Sandy Cove, Clover, S.C. 29710

Continuation-in-part of Ser. No. 211,475, Nov. 28, 1980, abandoned, and Ser. No. 229,966, Jan. 30, 1981, abandoned. This application Mar. 5, 1985, Ser. No. 708,490

Int. Cl.[4] B65D *85/30*

U.S. Cl. 206—325 15 Claims

1. A packaged replacement window comprising: a carton; at least one pair of window sash in the carton with one sash of the pair overlying the other sash of the pair, the sash being adapted to close a window opening; and jamb assemblies in the carton and being adapted for installation along the sides of the window opening to hold the sash in the opening, each jamb assembly being segmented intermediate its ends into sections which lie along the edges of the sash, the jamb assemblies being at least as deep as the combined thicknesses of the two sash and being disposed within the carton such that a deeper face on each is presented opposite to the side edge of the sash, whereby the jamb assemblies provide columnar strength along the sides of the carton.

4,583,640

PACKAGING ARRANGEMENT FOR ELECTRICAL CONNECTORS

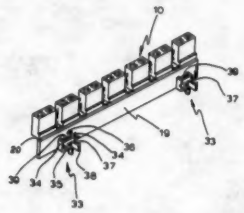
Paul T. Gillam, Basingstoke, United Kingdom, assignor to Molex Incorporated, Lisle, Ill.

Filed May 21, 1984, Ser. No. 612,483

Claims priority, application United Kingdom, Jun. 29, 1983, 8317678

Int. Cl.[4] B65D *65/00*

U.S. Cl. 206—328 7 Claims



1. A packaging arrangement for assembling at least two side-by-side parallel rows of connector housings, each row including a plurality of connector housings adapted to receive terminal means therein and similarly oriented and joined together by a common elongated integrally formed carrier strip, said arrangement comprising:

each carrier strip having a first and a second side; and

interengaging latching means cooperating between the first side of one strip and the facing second side of the adjacent strip for selectively attaching the rows together.

4,583,641

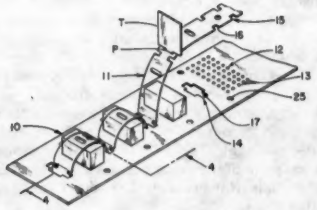
ARTICLE PACKAGING SYSTEM

John R. Gelzer, 2211 Lane Rd., Columbus, Ohio 43220

Filed Sep. 20, 1984, Ser. No. 652,579

Int. Cl.[4] B65D *73/02*

U.S. Cl. 206—330 40 Claims



1. An article packaging system for a plurality of articles disposed seriatim in predetermined relationship including a primary package comprising

(A) a carrier tape of elongated strip form having a plurality of article locating means disposed seriatim along a longitudinal axis of said tape in spaced relationship on a surface thereof, each of said article locating means adapted to cooperatively engage with at least one article to releasably position that article in a predetermined location and orientation with respect to said tape,

(b) article bonding means for maintaining articles on said carrier tape in association with respective article locating means, said bonding means including a flexible article

bonding tape of elongated strip form disposed in longitudinally extending relationship to said carrier tape and overlying articles positioned in engagement with respective ones of said article locating means, and

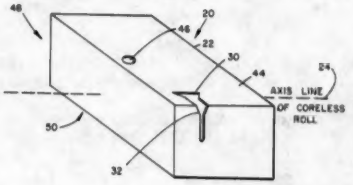
(C) interengaging means for releasably interconnecting said bonding tape with said carrier tape at selected points spaced longitudinally of said carrier tape at opposite sides of said article locating means whereby articles positioned in engagement with respective article locating means will be retained in packaged relationship, said interengaging means including a plurality of apertures formed in said carrier tape with an aperture disposed at each of said selected points, said bonding tape formed into a loop at each point of interconnection with said carrier tape with each loop projected through a respective aperture and extending a predetermined distance from the carrier tape.

4,583,642

DISPENSER PACKAGE FOR A COLLECTION OF INTER-CONNECTED SEVERABLE SHEET MATERIAL AND METHOD OF DISPENSING

James E. Blythe, Williamson; Peter F. Wiseman, Canandaigua, and Daniel G. Carr, Fairport, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 25, 1984, Ser. No. 614,008
Int. Cl.⁴ B65D *79/00;* **B65H** *35/10*
U.S. Cl. 206—390 **11 Claims**



1. A dispenser package comprising in combination a dispensing container having therein a collection of inter-connected severable sheet material, said container having at least one unitary multi-functional dispensing orifice, said orifice having an intercommunicating first part and second part, the first part is in one wall of the container and the second part is in another contiguous wall of the container, said first part having a periphery which defines a comparatively broad area said first part periphery also defines a plurality of comparatively narrow areas, said first part periphery narrowing and merging with said second part, said second part also having a periphery which defines an area narrower than the region of merging and being remote from all other areas.

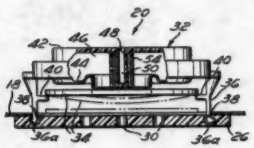
10. A method for dispensing severable sheet material comprising providing a dispenser container including therein a collection of sheet material and providing at least one unitary, multi-functional dispensing orifice in the container, said orifice having an intercommunicating first part and second part, the first part being in one wall of the container and the second part being in another contiguous wall of the container, said first part having a periphery which defines a comparatively broad area, said first part periphery also defines a plurality of comparatively narrow areas, said first part periphery narrowing and merging with said second part, said second part having a periphery which also defines an area narrower than the region of merging and being remote from all other areas; said sheet material comprising a plurality of individually severable sheet materials, said members being defined by transverse pre-weakened regions, said collection, because of its shape and position within said container not being rotatable, said collection having an end portion located adjacent said orifice so as to be comparatively easily pulled therethrough by two fingers, pulling a sheet member through said orifice to a point beyond said pre-weakened region and pulling the sheet member into a narrow area with a sudden force sufficient to cause separation of said sheet at said pre-weakened region.

4,583,643

STERILE BAG

Roger S. Sanderson, 24662 Santa Clara, Dana Point, Calif. 92629

Filed Apr. 8, 1983, Ser. No. 483,266
Int. Cl.⁴ B65D *33/01, 81/18*
U.S. Cl. 206—438 **20 Claims**



1. Apparatus for containing articles to be sterilized in a steam autoclave or the like, comprising:

a flexible, impermeable bag; and

a valve and actuator assembly mounted in a wall of the bag for permitting sterilizing fluid into the bag during a sterilizing cycle and for closing the bag when the articles therein have been sterilized, but before the bag is exposed to unsterilized environment, said assembly including a stiff support member sealingly secured to the bag and having a valve opening therein, and an actuator for automatically closing the valve opening on said support member, said actuator and said support member having interconnecting means for releasably supporting said actuator on said support member, a valve element, said actuator having means for releasably holding the valve element in a valve open position adjacent said opening, said actuator further including means for providing a force to move said valve element into a valve closed position covering said opening with said actuator reacting against the member during the closing operation.

16. A valve and actuator assembly for use with a container having a wall with a valve opening therein comprising: an actuator shell and a movable wall defining an expandable chamber, the movable wall being secured at its periphery to the shell, a plurality of legs formed on the shell and extending away from the shell on the side of the movable wall for mounting the legs into mating sockets supported in the wall of the container surrounding the container valve opening.

4,583,644

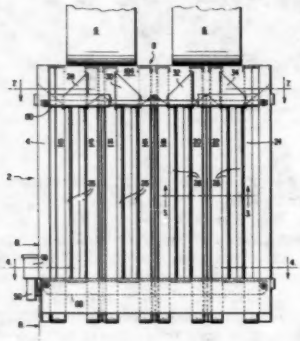
FRUIT SIZER

Gary O. Niemann, 3204 F Lake Hartridge Dr. NW., Winter Haven, Fla. 33880

Filed Oct. 21, 1982, Ser. No. 435,545
Int. Cl.⁴ B07B *13/05*
U.S. Cl. 209—660 **2 Claims**

1. A sizer of the type having a plurality of parallel paths and size-gauging means associated with said paths, said sizer further comprising a plurality of flexible conveyor belts, each of said flexible conveyor belts being associated with a respective one of said parallel paths, a plurality of first roller means, each of said first roller means being located at an end of a respective said path and engaging a respective said flexible conveyor belt, second roller means for engaging said plurality of flexible conveyor belts, each of said first roller means being mounted for rotation about a respective first axis and said second roller means being mounted for rotation about a second axis which is skew with respect to each said respective first axis, each said first roller means being oriented with respect to said second roller means so that each said flexible conveyor belt extends

from a respective said first roller means to said second roller means and is twisted about a centerline of said flexible conveyor belt extending from said respective first roller means to said second roller means to apply equal tension to opposed sides of said flexible conveyor belt, and drive roller means mounted for rotation about a third axis parallel to said second axis for engaging said plurality of flexible conveyor belts and for causing said flexible conveyor belts to move wherein said centerline is parallel to a portion of said flexible conveyor belt extending from said first roller means in the direction of a respective one of said parallel paths, a plurality of pan means,



each of said pan means supporting a respective one of said flexible conveyor belts in a portion of a respective one of said parallel paths, each of said pan means being generally planar and lying in a plane parallel to a respective said first axis and further comprising a plurality of third roller means each of said third roller means engaging a respective flexible conveyor belt and being located at an end of a respective said parallel path opposite that of a respective said first roller means, each respective said third roller means being mounted for rotation about a respective third axis which is parallel to a respective said first axis.

4,583,645

VIBRATORY GRAIN SEPARATING APPARATUS USED WITH RICE-HULLING APPARATUS

Shoichi Yamamoto, 813-17 Qaza Tendou Kou, Tendou-Shi, Yamagata-Ken, Japan

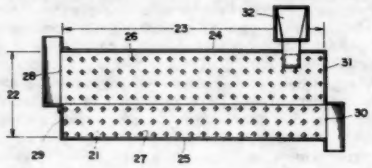
Filed Aug. 11, 1983, Ser. No. 522,093

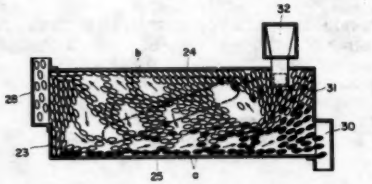
Claims priority, application Japan, Dec. 2, 1982, 57-211781; May 14, 1983, 58-84754

Int. Cl.[4] B07B *13/00*

U.S. Cl. 209—694 **11 Claims**

1. A method of vibratory grain separating using a separating element having a front and a rear upright edge wall and outlets provided on opposite sides thereof, comprising feeding a mixture of rice consisting of unhulled, partially hulled and hulled rice onto said separating element while reciprocating said separating element in a direction transversely of said front and rear walls, and separating the hulled from the unhulled rice by causing the hulled rice to be urged progressively toward the front wall of said element and the unhulled rice to be urged progressively toward the rear wall thereof, the separated unhulled rice being led out from one of said opposite side outlets, the hulled rice being led out from the other side outlet, and the partially hulled rice remaining as a mixture that is revolved





over a central portion of said separating element without being led out to the outside of said separating element.

4,583,646

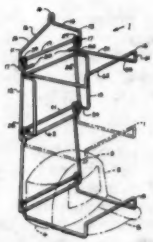
SECTIONAL RACK FOR CAPS AND THE LIKE

James M. Bowman, Joplin, Mo., assignor to B. Quad, Inc., Joplin, Mo.

Filed Jul. 13, 1984, Ser. No. 630,690

Int. Cl.[4] A47F *7/06*

U.S. Cl. 211—32 **4 Claims**



1. A sectional rack for caps and the like, which comprises:

(a) a wire hanger section including:

(1) a loop at an apex of said hanger section;

(2) a pair of legs each including a proximate portion extending outwardly and downwardly from said loop and an upright distal portion extending downwardly from said proximate portion;

(3) a pair of feet each extending inwardly from a respective leg proximate portion, said feet terminating in mutually opposed, spaced relationship; and

(4) a hanger cross-bar extending transversely between said leg distal portions in spaced relation above said feet;

(b) a wire vertical section including:

(1) a pair of legs each having a top and a bottom, a return forming a hook at said top and a forwardly extending bight portion at said top in spaced relation below said hook, said bight portion forming a rearwardly-open notch;

(2) a base integrally connected to and extending transversely between said leg bottom portions; and

(3) a cross-bar extending transversely between said leg bottom portions in spaced, parallel relation above said base;

(4) said hooks being adapted for receiving said hanger cross-bar whereby said vertical section is suspended from said hanger section; and

(c) a wire shelf section including:

(1) a pair of arms each having back and front ends;

(2) a pair of back legs each integrally connected to and extending from a respective arm back end;

(3) a pair of returns integral with said back legs and each forming a respective shelf hook pivotally recieving one of said hanger and vertical section cross-bars;

(4) a pair of front legs extending from said arm front ends; and

(5) a front bar extending transversely between said front legs in parallel, spaced relation to a plane defined by said shelf arms.

4,583,647

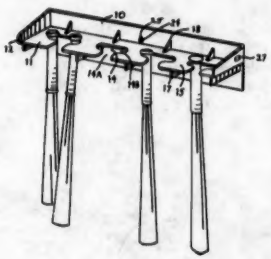
RACK FOR HANGING BATS OR OTHER OBJECTS

Walter W. Schinzing, 1932 Gervais, Maplewood, Minn. 55109

Continuation-in-part of Ser. No. 462,081, Jan. 28, 1983, abandoned. This application Apr. 5, 1985, Ser. No. 720,134

Int. Cl.[4] A47F *5/08*

U.S. Cl. 211—60.1 **1 Claim**



1. A rack which can be mounted onto a chain-link fence or backstop to support sporting equipment in a substantially vertical position, said rack being a molded unit comprising:

an elongated, rectangular vertical mounting plate;

a horizontal supporting ledge projecting perpendicularly from said mounting plate;

end plates at either end connecting said mounting plate to said supporting ledge at right angles to each;

a plurality of niches formed into said supporting ledge, each niche comprising a neck through which an object to be stored may be inserted, and a main elliptical portion perpendicular to said neck, the diameter of said elliptical portion being small enough to contact the handle of the object to be supported;

said ledge having a plurality of flanges defined by and located between said niches and between said niches and said end plates;

cross-bracing means positioned on the underside of each of said flanges;

means for mounting said rack onto said fence or backstop, said means comprising:

a strip extending horizontally across the back of said mounting plate;

guide arms formed at either end of said strip, each guide arm being parallel to said mounting plate and defining a slot between said mounting plate and each said guide arm into which links of said backstop may be inserted;

and adjustable clip means for tightening said rack against said links of said fence, said adjustable clip means being bolted through an opening in said mounting plate and being adjustable by wing nut means.

4,583,648

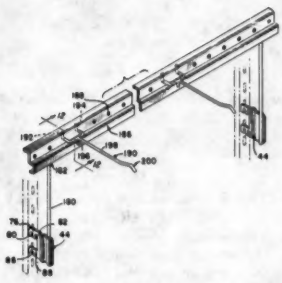
ANGULARLY ADJUSTABLE SHELF AND SUPPORT

Jesse D. Buffington, Trenton, Ga. and Bruce Young, III, Chattanooga, Tenn., assignor to Stainless Metal Products, Inc., Chattanooga, Tenn.

Filed Aug. 20, 1981, Ser. No. 294,638

Int. Cl.[4] A47F *5/08*

U.S. Cl. 211—90 **1 Claim**



1. An angularly adjustable shelf device comprising:

a pair of support arms each of which includes a plurality of projections, said projections being received in holes defined in a pair of wall brackets mounted on a wall to couple said support arms to said wall;

angular adjustment means on said support arms, said angular adjustment means including notches defined in each of said projections, with notches in one of said projections being aligned with corresponding notches in another of said projections;

said notches of the respective projections engaging the respective wall brackets at the periphery of the bracket holes defined therein to couple each of said support arms to the respective wall brackets;

notches from each projection engaging said wall bracket holes so that the angle of each of said support arms with respect to said respective wall brackets is adjustably set;

a support bracket having a plurality of spaced apart holes defined therein, each of said support arms including a rod connecting said angular adjustment means to said bracket;

prong support means releasably mounted on said support bracket;

said prong support means comprising a body portion having three legs at one end thereof for engagement with said support bracket, two of said legs mountable in adjacent holes of said plurality of spaced holes and the third leg resting against said support bracket, and a bent section at the other end of said body for supporting and holding articles thereon.

4,583,649

LINE LOCK

John A. S. Brown, Edwardstown, Australia, assignor to Hills Industries Limited, Edwardstown, Australia

Filed Nov. 26, 1984, Ser. No. 674,579

Claims priority, application Australia, Nov. 24, 1983, PG2544

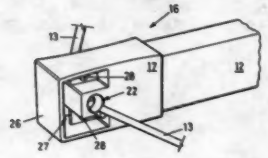
Int. Cl.[4] A47F *5/00*

U.S. Cl. 211—183 **5 Claims**

1. A line lock on a rotary clothes dryer having radiating arms which carry clothes lines, comprising a locking block, walls of the locking block defining a socket positioned over a said arm with said walls engaging said arm end,

surfaces defining a plurality of tie apertures extending through the block, at least one of the clothes lines extending through a respective one of the tie apertures, and

flexible line tie means extending through at least one other of the tie apertures, the tie means being tied to said one of the



clothes lines and locking that said clothes line to the locking block.

4,583,650

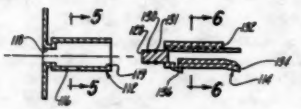
MANUALLY RELEASABLE DRAINPORT CLOSURE APPARATUS

Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Southfield, Mich.

Continuation-in-part of Ser. No. 523,847, Aug. 17, 1983, Pat. No. 4,508,234. This application Mar. 11, 1985, Ser. No. 710,462

Int. Cl.[4] B65J *55/02*

U.S. Cl. 215—206 **8 Claims**



1. A drainport closure apparatus for a fluid containing vessel comprising:

a housing portion having first and second end, said first end communicating with said vessel and forming a port, said housing further forming at least one aperture,

a plug member slidably received by said housing having a center post and forming two legs, wherein one or more tangs are formed by a first leg of said legs, said first leg being manually deflectable toward the other thereby causing one of said tangs to be moved into and out of engagement with said aperture thereby permitting said plug to be positioned within said housing between a first and a second position, and said first leg being greater in length than said other leg, and

seal means carried by said plug member center post, said seal means preventing flow through said port when said plug is in said first position, said seal means allowing fluid drainage from said vessel when said plug is moved to said second position.

4,583,651

NOVELTY BOTTLE CAP-TOY TOP

Werner Ostberg, 210 Skyline Dr., Easton, Pa. 18042

Filed Mar. 26, 1985, Ser. No. 716,261

Int. Cl.[4] B65D *51/24*

U.S. Cl. 215—228 **7 Claims**

1. A novelty bottle cap-toy top adapted to close the open end of a bottle and to be used as a toy top, comprising:

A. a hollow semi-spherical shell comprising:

1. an upper portion having

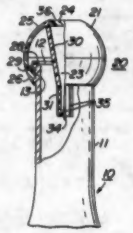
(a) a flat top surface segment, and

(b) a semi-hemispherical surface;

2. a lower portion having

(a) a semi-hemispherical surface, and

(b) an inwardly extending bottle sealing portion designed and constructed to engage and seal the open end of said bottle; and



B. a stem portion extending outwardly from the interior of said hollow shell through said bottle sealing portion of the lower portion of said hollow shell.

4,583,652

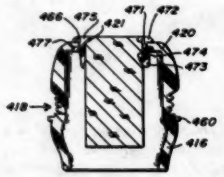
SAFETY CLOSURE DEVICE

James R. Goldberg, 315 Grandview Ave., Novato, Calif. 94947

Continuation-in-part of Ser. No. 629,369, Jul. 10, 1984. This application Oct. 1, 1984, Ser. No. 656,781

Int. Cl.[4] B65D *41/52*

U.S. Cl. 215—256 **4 Claims**



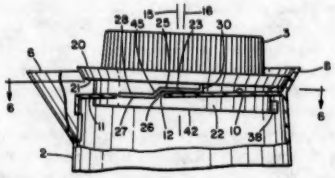
1. A safety closure device comprising, a cylindrical closure element adapted to close the mouth of a bottle or the like by frictional engagement with the interior facing surface of the mouth, a cylindrical retainer collar, and an intercoupling means connecting said collar to said closure element with said closure element and said collar extending substantially coaxially with each other, said intercoupling means further comprising a cup-like portion that is shaped to extend over the lip of the container, said intercoupling means comprising a tether strip integrally formed in a predetermined configuration extending from said cup-like portion to said collar, said tether strip being joined to and separable from the rest of said intercoupling means along a substantial portion of its length by a pair of frangible webs of a preselected thickness to permit said tether strip to be manually separated, said closure element comprising a separate unitary structure and being secured to said cup-like portion of said intercoupling means about the periphery of one end of said closure element said closure element being cylindrical and being formed of a material selected from the group comprised of cork or a cork composition material, said cork or cork composition closure element being attached to a collar having means to mate with said intercoupling means thereby mechanically securing said closure element to said intercoupling means.

4,583,653

CONTAINER WITH LID

Norman C. Minsky, West Bend, Wis., assignor to Dart Industries, Inc., Northbrook, Ill.

Filed Jul. 3, 1985, Ser. No. 752,223
Int. Cl.[4] B65D *41/06, 41/36*
U.S. Cl. 220—300 21 Claims



1. A container having a lid which can be selectively rotated to a secured position and to a visually distinct unsecured position, comprising:

a container body having an upper wall forming a generally circular opening in said body for introducing material into said body, said upper wall having an upper face and a lower face, and having a lateral face forming a first notch and a second notch in said upper wall,

a flange on said lid having a shoulder adapted to engage said upper face when said lid is in a first rotational position and in a second rotational position with respect to said body, said lid adapted to substantially cover said opening in said first rotational position,

a skirt proximate said shoulder extending downwardly from said lid, adapted to be received by said opening proximate said lateral face when said lid is in said first rotational position,

first and second upper tabs projecting from said skirt proximate said shoulder adapted to be received by said first and second notches, respectively, said first and second upper tabs having top bearing surfaces adapted to reside adjacent to said lower face when said lid is in said first rotational position and having bottom bearing surfaces adapted to engage said upper face to support substantially all of said shoulder out of contact with said upper face when said lid is in a third rotational position, said first and second upper tabs adapted to be aligned with said first and second notches, respectively, when said lid is in said second rotational position intermediate said first rotational position and said third rotational position, and

first and second lower tabs projecting from said skirt adjacent to said first and second upper tabs, respectively, more distant from said shoulder than said first and second upper tabs, adapted to be received by said first and second notches, respectively, said first and second lower tabs adapted to be aligned with said first and second notches, respectively, when said lid is in said third rotational position, and adapted to underlie said lower face when said lid is in said second rotational position,

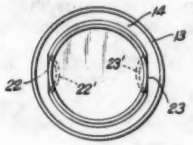
whereby said lid is secured in place by said first and second tabs when said lid is in said first rotational position, said lid is loosely held in place by said first and second lower tabs when said lid is in said second rotational position, and said lid is unsecured and supported above said upper wall by said first and second tabs when said lid is in said third rotational position.

4,583,654

PLASTIC HOLE PLUG

Frederick J. Pufpaff, Loudonville, and John M. Maloney, Mechanicville, both of N.Y., assignors to Simmons Fastener Corporation, Albany, N.Y.

Filed Jun. 19, 1985, Ser. No. 746,512
Int. Cl.[4] B65D *39/00*
U.S. Cl. 220—307 7 Claims



1. A hole plug which is a unitary one-piece injection-molded plastic resin member adapted to fit into a hole in a panel comprising:

a top closure wall portion whose top face is domed, said top wall portion terminating at its outer edge of the top face in a curved lip and having a bottom support ledge portion which is adapted to rest on the panel face;

a tubular shank portion extending from the top wall portion and having an imaginary central axis, an inner wall and an outer wall;

said outer wall having, as contiguous ring-like circumferential bands, a first band contiguous to the top wall portion and canted outwardly from said axis starting at its juncture with the top closure wall, a second band contiguous to said first band and canted inwardly toward the axis from its juncture with the first band; and

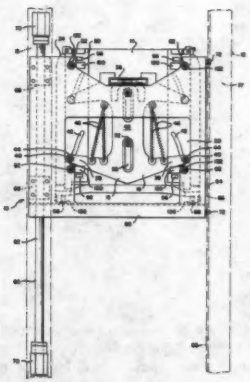
a pair of opposed and parallel flat portions on said outer wall to permit inward flexing of the hole plug, the flat portions extending through said first and second bands and being on opposite sides of said outer wall.

4,583,655

LOCKING PIN AND GUIDE MECHANISM FOR A DOOR CLOSURE

Kenneth J. Fisher, Erie, and John N. Roche, Greenville, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Apr. 4, 1985, Ser. No. 719,905
Int. Cl.[4] B65D *43/20*
U.S. Cl. 220—346 9 Claims



1. A guide mechanism for use with apparatus for opening and closing a door of a chamber comprising:

a way system for maintaining the door in alignment with the chamber while the door is opened and closed; and

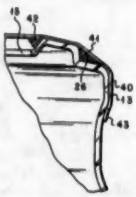
a carriage member operatively linked to the way system for linking the door to the way system, the carriage member having means for engaging the door, the engaging means being so operatively associated with the apparatus that the engaging means engage the door when it is opened and disengage the door when it is closed.

4,583,656

CONTAINER WITH IMPROVED SEALING LIP

Donald N. MacLaughlin, Midland, Mich., assignor to Vercon, Inc., Dallas, Tex.

Filed Jun. 17, 1985, Ser. No. 745,106
Int. Cl.[4] B65D *41/00*
U.S. Cl. 220—359 **4 Claims**



1. A container having a vertical side wall, a bottom closure, and a top rim, said top rim defining a top opening, said container further comprising:

a seal rim formed on said top rim and having a stepped upper surface with a first radially inward located sealing surface, and a second radially outward sealing surface connected to said first sealing surface;

said first and second sealing surfaces being separated by a vertical stepped portion arranged to form an annular recessed sealing area;

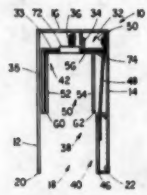
wherein said first sealing surface forms the uppermost rim portion of said top rim and is generally defined by concentric, generally vertical surfaces separated by a generally horizontal surface; and said second sealing surface comprises a generally horizontal sealing surface merging with the outermost vertical surface of said first sealing surface, and a vertical outwardly projecting roll rim defining a lower inset portion adapted to receive a crimped top closure thereon.

4,583,657

ADAPTER FOR A PACKAGE DISPENSING MACHINE

Everett N. Finn, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jul. 5, 1984, Ser. No. 628,105
Int. Cl.[4] B65G *59/00*
U.S. Cl. 221—199 **1 Claim**



1. In a cigarette package dispensing machine of the type having a package column support housing for supporting two adjacent front to back ranks of columns of stacked cigarette packages of a predetermined size, the column support housing including two spaced, parallel side walls, a back wall generally perpendicular to and interconnecting the side walls, an open front defined by the front free edges of the side walls opposite the back wall, and an open bottom through which packages exit the column support housing one at a time, a movable package column pusher plate located within the support housing generally coextensive with and parallel to the housing back wall and mounted for movement from the housing back wall toward the open front of the housing, and means for biasing the movable pusher plate in a direction away from the housing back wall toward the open front of the housing, the improvement of a device for adapting the column support housing to support packages of a smaller size than the predetermined package size, comprising:

a spacer panel adapted to be located in generally parallel, spaced relationship to a portion of one side wall of the column support housing, the spacer panel extending vertically substantially the entire height of the housing side wall and extending horizontally from the free front edge of the housing side wall toward the housing back wall a distance substantially corresponding to the front to back dimension of a column of packages to be supported in the housing, terminating at a back edge, and the distance by which the spacer panel is to be spaced from the housing side wall being substantially equal to the difference in width of the package of predetermined size and the package of smaller size, the spacer panel including a spacing flange formed at the vertical front edge of the spacer panel immediately at the vertical free front edge of the support structure side wall holding the spacer panel away from the support structure side wall;

an elongate bracket attached at one of its ends to the spacer panel and attached at its other end to the housing side wall for attaching the spacer panel in a fixed position to the column support housing;

a package column slide structure adapted to be slidably received in the support housing, the slide structure having two spaced apart, parallel side walls, a back wall perpendicular to the parallel side walls and interconnecting the side walls, an open front defined by the free edges of the side walls opposite the back wall, and an open bottom defined by the bottom edges of the side walls and bottom edge of the back wall, the width of the slide structure between the side walls being less than the width of the column support housing between the housing side walls, and one side being adjacently positioned in parallel relationship to the housing side wall having the spacer panel, the slide structure side wall being spaced from the adjacent housing side wall by a distance greater than the distance by which the spacer panel is spaced from the same housing side wall, and the back wall being located in parallel overlaying relationship to the pusher plate;

a hanger associated with the back wall of the slide structure at the top edge of the back wall forming a downwardly projecting lip spaced from the back wall of the slide structure by a distance equal to the thickness of the pusher plate receiving therein the top edge of the pusher plate for attaching the package column slide structure to the pusher plate so that the package column slide structure moves with the pusher plate; and,

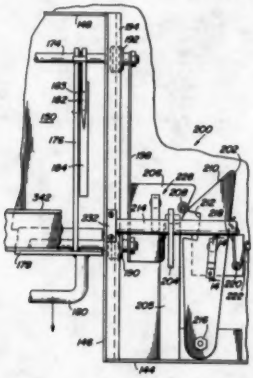
a stop flange projecting from the slide structure side wall adjacent the housing side wall having the spacer panel toward the adjacent housing side wall for abutting the back edge of the spacer panel for stopping movement of the column slide structure at a predetermined position between the column support housing back wall and open front of the column support housing.

4,583,658

SINGLE NEWSPAPER VENDING MACHINE

Benjamin Israel, Meadowbrook Apartments #160, Meadowbrook Dr., Huntingdon Valley, Pa. 19006

Filed Oct. 24, 1983, Ser. No. 544,921
Int. Cl.[4] B65G 59/02
U.S. Cl. 221—213 24 Claims



1. Single newspaper vending machine, comprising:
an elevator for supporting a stack of newspapers,
means for advancing said elevator to an elevation at which the top newspaper of the stack is in a position to be dispensed,
a gate unit including a dispensing mechanism reciprocable between rear and forward positions for contacting and advancing the top paper on the stack horizontally such that a portion of the paper enters a paper access zone during movement of the dispensing mechanism from the rear to the forward position, and a blocking mechanism for preventing horizontal advance of a newspaper from the stack when the dispensing mechanism is in the rear position, said blocking mechanism including a blocking member biased to a position wherein the member blocks horizontal advance of a newspaper, and a latch spaced from said dispensing mechanism for capturing said blocking member in said position, said dispensing mechanism including means for moving said latch as said dispensing mechanism moves from said rear position to said forward position so as to free said blocking member and for yieldingly displacing the freed blocking member so as to clear a path for the newspaper being advanced by the dispensing mechanism to the paper access zone,
a coin mechanism, and
a dispensing mechanism latch operatively associated with the coin mechanism for locking the dispensing mechanism in the rear position when the coin mechanism is in a reset condition and for releasing the dispensing mechanism when the coin mechanism is in a set condition.

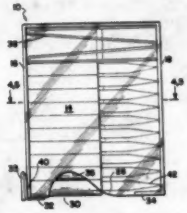
4,583,659

CARTRIDGE DISPENSER

George L. Carter, Box 322, Sheridan, Mont. 59749

Filed May 16, 1983, Ser. No. 494,814
Int. Cl.[4] F42B 39/02
U.S. Cl. 221—279 3 Claims

1. A cartridge dispenser for dispensing cartridges having a casing and a bullet end, the casing further having a transition region running from the casing to the bullet comprising:
an open bottom housing having a top wall, a pair of opposed end walls, a front wall and a rear wall for holding at least two columns of cartridges, each cartridge having a casing end and a bullet end, in a normal horizontal position, one on top of the other with the cartridges being aligned with the casing end of each cartridge abutting the same end wall and with the cartridges in each column being offset from cartridges in the adjacent column;
the rear wall having a top planar portion and a bottom planar portion, the two planar portions being joined by a portion which angles toward the front wall from the top planar portion to the bottom planar portion;
the distance between the top planar portion and the front wall being more than the maximum diameter of a cartridge but less than twice the maximum diameter of a cartridge and the distance between the bottom planar portion and the front wall being slightly more than the maximum diameter of the cartridge;
the open bottom shaped to permit dispensing of cartridges from the housing in a vertical direction which is perpendicular to a plane formed by the bottom of the housing;



the open bottom of the housing having at one end thereof a stop means for holding the bullet end of the cartridge within the interior of the housing;
the open bottom of the housing having at the other end thereof a first resilient means engaging the lower most surface of the casing of the cartridge for yieldingly holding the cartridge within the interior of the housing; and
guide (cam) means incorporated in opposing relation in the first and rear walls adjacent the transition region of the cartridge casing which guide means run from the top wall to a position approximately horizontally aligned with the top of the bottom planar portion, the dimension of the guide means in the direction between the rear wall and the front wall being selected to engage opposite sides of each cartridge to compensate for the smaller diameter of the cartridge in the transition region, which guide means in cooperation with the stop means and first resilient means cause each cartridge to be held in parallel relation to each other cartridge within the housing.

4,583,660

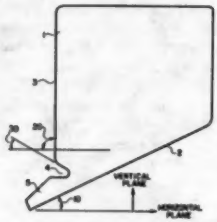
VIBRATORY TONER DISPENSING SYSTEM

Marcus A. La Barre; Jeffrey L. Trask, and Roger D. Archibald, all of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 27, 1982, Ser. No. 423,892
Int. Cl.[4] B65G 27/32
U.S. Cl. 222—1 4 Claims

1. Apparatus for dispensing a powder at a substantially constant rate, said apparatus comprising:
container means having substantially lower mass than the powder, and having a bottom inclined at less than the angle of repose of the powder, for containing the powder;
agitation means for agitating the container means and the powder container therein, said container means, powder contained therein and agitation means in combination having a natural frequency of vibration substantially determined by the mass of the powder contained therein;
said agitation means being effective for agitating the container means and the powder contained therein at a driving frequency equal to or less than the natural frequency

of said combination when the container means is full of powder; and



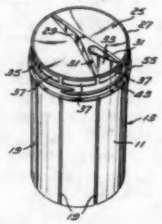
said agitation means includes adjustable mounting means for mounting the container means and for adjusting the natural frequency of said combination to a value equal to or greater than the driving frequency.

4,583,661

MOISTURE-PROOF CONTAINER

William M. Clover, Jr., Trabuco Canyon, Calif., assignor to Kirstine/Hendricks, Irvine, Calif.

Filed Sep. 6, 1984, Ser. No. 647,980
Int. Cl.[4] B65D *83/04*
U.S. Cl. 222—42 **6 Claims**



4. A moisture-proof multi-compartment container comprising:

a generally cylindrical shaped container body, said container body comprising an integral bottom portion and an open upper end portion, a plurality of walls disposed within said body arranged to define a plurality of chambers having a generally wedge-shaped cross section and extending vertically substantially the length of said body;

a selector plate rotatably mounted on said upper open portion of said container body, said selector plate having a selector aperture sized to generally correspond to the shape of said wedge-shaped chambers, said selector plate further having a projection adapted to be manually gripped to rotate said dispenser plate, said projection including a forked portion defining said aperture and forming guide walls about the aperture; and

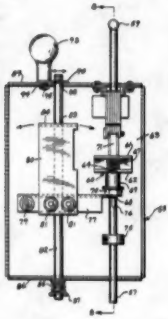
a sealing cap adapted to engage said container body to form a moisture-proof seal therewith, said cap having an upper wall extending over said plate and surrounding the upper end of said body.

4,583,662

METERING MECHANISM FOR A ROLLER MILL

Charles R. Silverthorn, and Ernest H. Sancken, both of Eureka, Ill., assignors to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Division of Ser. No. 405,303, Aug. 4, 1982, Pat. No. 4,485,977.
This application Jul. 13, 1984, Ser. No. 630,667
Int. Cl.[4] B67D *3/00*
U.S. Cl. 222—43 **4 Claims**



1. An apparatus for controlling the flow of a solid material, comprising a hopper to contain the material and having a discharge opening, a gate to close the opening and movable between a closed and open position, a housing connected to said hopper, a pull rod having one end connected to the gate, said pull rod extending through the housing, the opposite end of the pull rod projecting through said housing, an abutment on said pull rod, bracket means pivotally connected to the housing on a pivot axis disposed perpendicular to the axis of said pull rod, a stop mounted on said bracket means and disposed in the path of movement of said abutment on said pull rod, pivoting of said bracket means about said pivot axis varying the position of said stop relative to said pull rod, an operating rod connected to the bracket means, said housing having an elongated slot disposed perpendicular to said pivot axis, said operating rod extending through said slot to the exterior of said housing, and handle means on the outer end of said operating rod and located outside of said housing, movement of said operating rod in said slot serving to pivot said bracket means about said pivot axis to thereby vary the position of said stop to provide an infinite adjustment for the open position of said gate.

4,583,663

VALVE ASSEMBLY AND AUTOMATIC CONTROL SYSTEM FOR MATERIAL HANDLING AND STORAGE BIN

Timothy C. Bonerb, Orchard Park, N.Y., assignor to Vincent C. Bonerb, Boston, N.Y., a part interest

Continuation-in-part of Ser. No. 465,797, Feb. 11, 1983, Pat. No. 4,487,335, and a continuation-in-part of Ser. No. 480,499, Mar. 30, 1983, Pat. No. 4,534,596, and a continuation-in-part of Ser. No. 500,821, Jun. 3, 1983. This application Oct. 10, 1984, Ser. No. 659,248
Int. Cl.[4] B65D *88/62*
U.S. Cl. 222—61 **36 Claims**

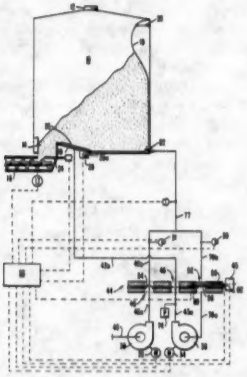
1. In a system for handling, storing and discharging flowable granular, powder or flake material, the system being of the type having a generally cup-shaped inflatable bag for storing and discharging the material, said bag including a flexible, inflatable inner primary membrane for assisting in gravity discharge of the material, the material discharging through a discharge opening in the bag, a flexible, inflatable supplemental membrane for discharging material remaining in the bag after

inflation of the primary membrane, a first blower means for inflating the bag and a second blower means for deflating the bag, an improved valve and control assembly comprising;

(a) a first outlet conduit connected to the outlet of the first blower means and connected to inflate the bag, the intake of the first blower means in communication with the atmosphere;

(b) an inlet conduit connected to the intake of the second blower means and connected to deflate the bag;

(c) a second outlet conduit connected to the outlet of the second blower means and connected to allow inflation of the supplemental flexible membrane, said second outlet



conduit including means for venting to the atmosphere, during or after inflation of the supplemental membrane, excess fluid pressure generated by said second blower means;

(d) a valve assembly including check valve means permitting unidirectional flow of high-volume low-pressure fluid from the first blower means through the first outlet conduit to the bag, second valve means controlling high-volume low-pressure flow of fluid from the bag through the inlet conduit to the second blower means, and passage means allowing flow of fluid from the second blower means through the second outlet conduit to the supplemental membrane.

4,583,664

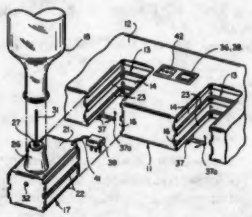
LIQUID DISPENSING SYSTEM

John J. Bayat, 3705 Boulder Ct., Reno, Nev. 89509

Continuation-in-part of Ser. No. 234,961, Feb. 17, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,555

Int. Cl.[4] B67D *1/04*

U.S. Cl. 222—61 **7 Claims**



1. In a system for dispensing liquid from bottles: a console having a generally planar upper surface and a plurality of dispensing stations each comprising a generally rectangular bay which opens through the upper surface of the console and is open on one side thereof; individual generally rectangular modular cartridges having generally planar upper surfaces removably mounted in the bays through the open sides thereof with horizontally extending mating guide rails carried by the console and cartridges guiding the cartridges into the bays and holding the cartridges in the bays with the upper surfaces of the cartridges flush with the upper surface of the console; each of said cartridges comprising a body, means for holding a bottle in an inverted position on the body, a fluid outlet, and valve means for controlling communication between the bottle and the outlet; actuating arms mounted on the console and extending beneath the bays for engagement by glasses moved into position to receive liquid from the outlets in the respective cartridges; and means responsive to the actuating arms connected to the valve means for controlling the amount of liquid dispensed from each of the bottles.

4,583,665

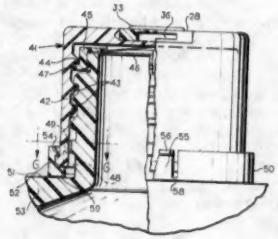
COMBINATION CONTAINER WITH MEMBRANE SEALED FINISH AND TAMPER-INDICATING DISPENSING CLOSURE

Jacques J. Barriac, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 8, 1984, Ser. No. 669,483

Int. Cl.[4] B67B *7/26;* **B65D** *47/10*

U.S. Cl. 222—83 **8 Claims**



1. A dispensing closure system in combination with a container having external threads on the finish and a closure having a generally planar top with a dispensing feature formed therein in the top, an integral, downwardly extending annular skirt with thread engaging means formed internally thereof, annular, rupturable band extending below the bottom of the closure skirt, said rupturable band seating on a generally horizontal area of the container below the external threads for maintaining a predetermined spacing between a membrane disc rupturing means carried by the underside of the closure top and a finish sealing, membrane disc adapted to be supported by an annular snap-on fitment, the improvement wherein said fitment is formed with an outwardly extending annular boss adapted to engage the interior of said closure skirt above the thread engaging means therein, and an inwardly extending annular bead formed in the skirt of said closure in overlying relationship to the annular boss on said fitment, whereby assembly of the closure and fitment to a container finish may be accomplished without rupture of the disc.

4,583,666

CONTAINER ATTACHMENT

Donald C. Buck, 2261 Woodward Ave., Lakewood, Ohio 44107

Continuation-in-part of Ser. No. 477,152, Mar. 21, 1983, abandoned. This application Apr. 9, 1984, Ser. No. 597,583

Int. Cl.[4] B67D *1/16;* **G01F** *11/28*

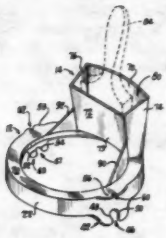
U.S. Cl. 222—109 **20 Claims**

1. A container attachment comprising:

(a) a rim guard member adapted to fit on a container to cover at least part of a rim of the container, said rim guard member having surfaces defining an opening of sufficient

dimension to permit access to the interior of said container; and

(b) a brush holder member fixed to said rim guard member and extending above the container rim, said brush holding member having a receptacle with a brush opening and a drain opening and adapted to support a brush in a generally upright position and permit excess fluid on said brush



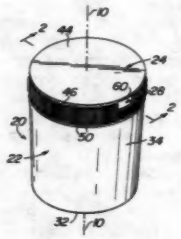
to drain from said brush through said drain opening of said receptacle, said drain opening being positioned to allow draining fluid to enter the interior of such a container and being located above the level of fluid in the container when in use whereby liquid from the container may be poured through the drain opening and at least a portion of the holder and an adjacent portion of the rim guard member surfaces connect to function as a pouring spout.

4,583,667

PARTITIONING DISPENSING CONTAINER

A. Harry Fishman, Hewlet Harbor, N.Y., and Joseph Bottitta, Belleville, N.J., assignors to APL Corporation, Miami Beach, Fla.

Filed Dec. 27, 1983, Ser. No. 566,054
Int. Cl.[4] B65D *83/04*
U.S. Cl. 222—142.6 **7 Claims**



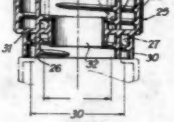
1. A partitioning dispensing container for separately storing and dispensing a plurality of different groups of individual items, said container being in the form of a hollow jar having a cylindrically shaped sidewall, a bottom wall, an open top, and a plurality of vertically disposed partitioning walls dividing the jar's interior space into a plurality of separate chambers, with each chamber being adapted to receive and hold therein plural items to be dispensed, said sidewall having a top edge and including a plurality of passages located about the periphery thereof adjacent said top edge, each of said passages being disposed between an immediately adjacent pair of said partitioning walls, said container further including lid means releasably and rotatably mounted on said jar portion adjacent the top to close the jar's chambers, each of said partitioning walls including a generally horizontal edge adjacent the open top of said jar, said lid means including a top wall and an annular sidewall, said sidewall including a dispensing slot of a sufficient size to enable any item disposed within any chamber to pass therethrough to enable an item to be dispensed from a selected chamber when the lid means is rotatably positioned so that said slot overlies the associated passage in said chamber, while the annular sidewall portions of the lid means close the other passages, thereby precluding dispensing of items therefrom, the container further comprising alignment means for facilitating the process of aligning the dispensing slot with respective passages , said alignment means including engagement means on said lid means, said engagement means comprising a pair of adjacent rib members arranged to receive therebetween and engage respective top edges of said partitioning walls when the cap means is rotated to a first position to align the dispensing slot with one of said passages, while resisting accidental rotational movement of the lid means with respect to the said jar which would tend to misalign said slot and said passage, said engagement means being releasable by the application of additional rotary force to said lid means to cause said rib members to be disengaged from the edge located therebetween, thereby enabling said lid means to rotate to a second position of alignment between another one of said passages and the dispensing slot, thus permitting access to another of the chambers.

4,583,668

POURING SPOUT FOR DIVERSE LIQUID CONTAINERS

Walter P. Maynard, Jr., Rte. 8, Cumming, Ga. 30130

Filed Oct. 5, 1984, Ser. No. 658,308
Int. Cl.[4] B65D *25/48, 47/14, 23/12*
U.S. Cl. 222—529 **7 Claims**



4. A universal pouring spout for liquid containers comprising a pouring spout body portion, and an end-for-end reversible threaded adapter for coupling a threaded terminal of the pouring spout body portion with a threaded outlet of a liquid container, said adapter including an interior threaded sleeve of uniform diameter from end-to-end of the adapter, and a pair of exterior threaded sleeve portions of differing diameters each larger than the diameter of the interior sleeve and each surrounding the interior sleeve in spaced concentric relationship thereto.

4,583,669

APPARATUS FOR DETECTING A TAPE SPLICE

Michael L. Sirkis, Holland, Pa., assignor to Fidelipac Corporation, Moorestown, N.J.

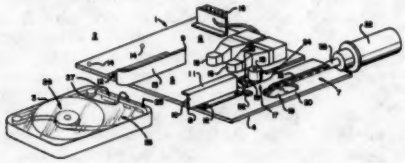
Filed Apr. 26, 1984, Ser. No. 603,667
Int. Cl.[4] B65H *20/02, 26/02*
U.S. Cl. 226—35 **20 Claims**

1. In combination with means for transporting a tape, said tape having portions which are thickened in relation to the remainder of said tape, and said transporting means comprising fixed, rotatable capstan means and pinch roller means movable from a retracted position to a position which engages said tape between said capstan means and said pinch roller means, means for detecting passage of said thickened portions of said tape between said capstan means and said pinch roller means, comprising:

pinch roller means including an actuation shaft journaled for rotation with respect to said transporting means, one end of which includes a pinch roller and the other end of

which includes drive means in operational association with a solenoid;

means for applying, in combination, an impedence and a reference voltage to said solenoid in a detecting mode, wherein said reference voltage is capable of maintaining said solenoid in an activated position wherein said pinch roller means engages said tape between said capstan means and said pinch roller, and so that movement of said drive means will cause a differential in voltage to be developed in said solenoid;



means for sensing said differential in voltage, in operational association with said solenoid; and

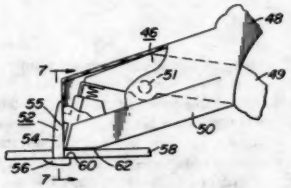
means for stopping transport of said tape in response to a detected differential in voltage, in operational association with said detecting means; so that in said detecting mode, passage of said thickened portions of said tape between said capstan means and said pinch roller causes movement of said drive means, developing a differential in voltage in said solenoid which is detected by said detecting means, stopping said transporting means.

4,583,670

SURGICAL STAPLING

Alfredo Alvarado, 1974 Heritage Rd., Huntingdon Valley, Pa. 19006

Filed Dec. 23, 1983, Ser. No. 565,086
Int. Cl.⁴ A61B *17/00, 17/04, 17/10*
U.S. Cl. 227—19 **9 Claims**



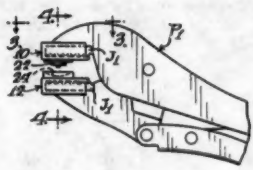
1. A surgical stapler for implanting and forming substantially rigid surgical staples to suture an incision in the skin or fascia of a patient comprising a member having a rearward portion including a handle portion and a forward portion, said forward portion having a front surface facing the incision, a staple-folding anvil disposed at the end of said forward portion and within said member, a pusher disposed above said anvil and movable toward said anvil for pushing a staple through the skin or fascia to be stapled and against said anvil, and a guide disposed at the forward-most end of said forward portion and attached to said member, said guide comprising an upright member which protrudes below the bottom of said forward portion and a base attached at the bottom end of said upright member, said base having a front facing the incision, said guide being shaped and of such dimensions to permit said base to be inserted beneath the surface of the skin or fascia and to permit said upright member to readily fit between the incision so as to allow said guide to plow through the incision.

4,583,671

VARIABLE FIT FASTENER ATTACHMENT

Clifford E. Cressy, 9224 Beech Ave., Munster, Ind. 46321

Filed May 11, 1984, Ser. No. 609,231
Int. Cl.⁴ B25C *1/02*
U.S. Cl. 227—144 **13 Claims**



1. A variable fit fastener attachment for a pair of pliers having jaws, comprising:

a pair of first and second fastener clamp means each including a bottom wall, a front wall, and a pair of laterally spaced sidewalls which together define a generally rectangular cavity for receiving a respective one of the jaws of said pliers whereby said first and second clamp means are adapted for removable fitment to said pliers jaws in generally opposed relation for applying clamping pressure to an associated fastener assembly positioned therebetween,

each of said first and second clamp means including variable fit means to permit fitment of said clamp means to different pairs of pliers having differently sized jaws, said variable fit means of each said clamp means comprising a pair of flexible gripping fins extending integrally inwardly of said cavity from respective ones of said sidewalls generally from respective junction of said sidewalls and said bottom wall, each of said gripping fins decreasing in thickness from its respective one of said sidewalls to a free edge thereof.

4,583,672

EXPLOSIVE WELDING DEVICE

Henry Q. Bibb, Lynchburg, Va.; David E. Merker, Minerva, and Louis E. Stark, Youngstown, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

PCT No. PCT/US82/01313, § 371 Date Nov. 18, 1982, § 102(e) Date Nov. 18, 1982, PCT Pub. No. WO84/01118, PCT Pub. Date Mar. 29, 1984
PCT Filed Sep. 24, 1982, Ser. No. 444,250
Int. Cl.⁴ B23K *20/06*
U.S. Cl. 228—2.5 **2 Claims**

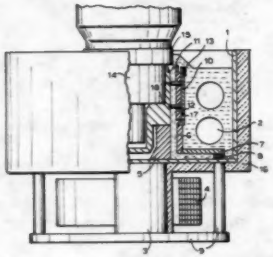
1. An explosive welding device to be used to weld a sleeve to a defective steam generator tube comprising; a cup member, explosive material secured within the cup, a plug attached to the cup member having remotely operable means for releasably securing the device into the tube having at least one spring acting collapsible member and, a means for detonating the explosive material.

4,583,673

APPARATUS FOR SOLDERING THE WINDING TO THE COMMUTATOR OF AN ELECTRIC MACHINE

Pavel M. Mintchev; Mihail H. Angelov; Hristomir D. Hristov; Stoimen S. Balinov, and Nikolay V. Yordanov, all of Sofia, Bulgaria, assignors to Institute po Metaloznanie i Technologia na Metalite, Sofia, Bulgaria

Filed Dec. 10, 1984, Ser. No. 679,883
Claims priority, application Bulgaria, Dec. 9, 1983, 63386
Int. Cl.[4] B23K *1/08, 3/06, 35/14*
U.S. Cl. 228—37 4 Claims



1. Apparatus for soldering the winding to the commutator of a rotor of an electric machine, comprising a vessel adapted to contain a bath of molten solder, electric resistance heaters in the vessel, a single-phase magneto-hydrodynamic pump having a first externally supported magnetic core surrounded by a winding disposed beneath the bottom wall of the vessel, a solder stream-formation unit made of ferro-magnetic material, which is concentric with the first magnetic core, the bottom wall of the vessel being diposed upon and supported by said first, externally supported magnetic core, within the vessel and on the bottom wall thereof there is rigidly fastened an additional, second, hollow magnetic core, which is a continuation of the first magnetic core, a tubular casing which is concentric with the second magnetic core, and which is of a stepped shape, seating with its external step on the additional, second, hollow magnetic core, the weight of a rotor placed in a seat in the upper end of the tubular casing being transmitted to the second magnetic core from the tubular casing, through the bottom wall of the vessel, to the first magnetic core, and then to the external support for the first magnetic core.

4,583,674

APPARATUS FOR APPLYING STRIPES OF SOLDER TO OPPOSITE SIDES OF CIRCUIT BOARDS

David R. Dines, Oklahoma City, Okla.; George Svoboda, Sun City West, Ariz., and Robert G. Workman, Yukon City, Okla., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Feb. 23, 1984, Ser. No. 582,680
Int. Cl.[4] B23K *31/02, 3/00*
U.S. Cl. 228—102 10 Claims

1. An apparatus for applying stripes of solder to two rows of terminals overlaying contact pads arrayed along opposite sides of a printed circuit board, which comprises:

an open frame holder for receiving and supporting opposed edges of a printed circuit board;

a pair of solder applying devices each having a solder feeding tube for guiding a strip of solder through an exit end thereof;

a closed loop conveyor means for continually advancing said holder through a pair of soldering sites each spaced from a respective exit end of said solder feeding tubes;

means for advancing and withdrawing said solder applying devices to move the exit end of a corresponding solder feeding tube into and out of a soldering site;

means for controlling the speed of said closed loop conveyor means and the advance and the withdrawal of said solder applying devices;

first means positioned at each solder applying device for sensing the presence of a frame holder approaching a soldering site for generating a signal to enable operation of said controlling means;

means advanced with said frame holder having a series of uniformly spaced elements;

second means positioned at each solder applying device for sensing said uniformly spaced elements as said elements move past a corresponding soldering site and for generating and applying pulses to said controlling means;

means responsive to the receipt of a predetermined number of pulses by said controlling means for advancing a solder applying device to a corresponding soldering site;

means responsive to the receipt of a subsequent pulse for feeding a solder strip through the tube of the advanced solder applying device to said soldering site;

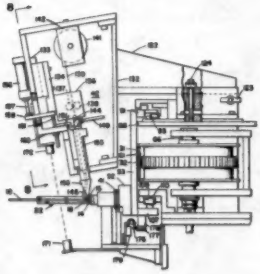
means for melting the solder fed to said soldering site; and

means for rotating said holder during its advance between soldering sites to present a different side of the printed circuit board to each one of the solder applying devices.

8. A method of applying solder stripes to junctions of connector terminals and contact pads arrayed along opposite sides of a printed circuit board, which comprises:

rotatably mounting a plurality of holding fixtures on a closed loop conveyor belt;

mounting an assembly including a connector and a printed



circuit board in each of the holding fixtures so that the board extends horizontally away from the conveyor belt;

continually advancing a succession of assembled connectors and printed circuit boards through a pair of spaced soldering sites, said connectors having their terminals abutting contact pads on opposite sides of the circuit boards;

sensing the approach of a printed circuit board to a soldering site and generating an enabling pulse to condition a controller for operation;

generating count pulses indicative of the advance of the circuit boards through the soldering sites;

applying said count pulses to said conditioned controller to produce a succession of control signals;

advancing a solder dispensing tube in response to a first control signal into position to direct a solder strip at the junctions of the abutted contacts and terminals on the board moving through a soldering site;

feeding the solder strip through the tube to emanate toward the moving abutted contacts and terminals in response to a second control signal;

applying a first stream of hot air to the abutted contacts, terminals and the adjacent sections of the printed circuit boards approaching the soldering sites to heat the abutted contacts and terminals to a temperature sufficient to melt the solder emanating from the tube and directed against the abutted contacts and terminals; and

rotating the holding fixtures to turn the boards over after

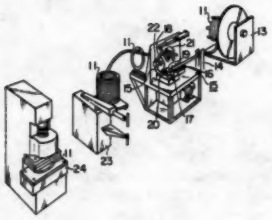
leaving a first soldering site and during advance to the second soldering site.

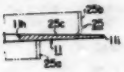
4,583,675

METHOD OF PRODUCTION OF A PART FORMED WITH AN OPENING

Izumi Ochiai, Tochigi; Katuo Matui, Utsunomiya, and Tadaaki Ayabe, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 451,961, Dec. 21, 1982, abandoned. This application Jul. 15, 1985, Ser. No. 755,219
Claims priority, application Japan, Dec. 23, 1981, 56-206946
Int. Cl.[4] B21D *11/08, 53/16;* B23K *11/10*
U.S. Cl. 228—155 **3 Claims**





1. A method of production of a part formed with an opening, the method comprising the steps of:

providing a straight metal strip material having longitudinal edges, leading and trailing ends;

subjecting said metal strip material to rolling to slightly reduce its thickness along one longitudinal edge causing said strip to be shaped into a ring-shaped blank having an outer peripheral portion and an inner side defining an opening;

wrinkling said inner side of the metal strip material by guiding the ring-shaped blank along an arcuate guide when the metal strip material is subjected to rolling at its one longitudinal edge to have a thickness thereof slightly reduced;

connecting said ends to one another; and

drawing said inner side portion of said ring-shaped blank to form a flange and remove the inner side wrinkling.

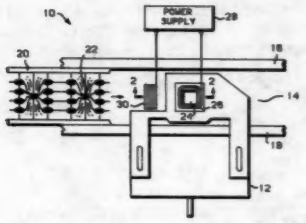
4,583,676

METHOD OF WIRE BONDING A SEMICONDUCTOR DIE AND APPARATUS THEREFOR

Edward Pena, Austin, Tex., and S. L. Cheong, Kuala Lumpur, Malaysia, assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1982, Ser. No. 374,449
Int. Cl.[3] B23K *31/02;* H05K *3/34*
U.S. Cl. 228—179 **11 Claims**

1. A semiconductor die surface heater in combination with a wire bonding assembly having a hold down clamp used for positioning a lead frame having a semiconductor die attached thereto with the die positioned within a window through said clamp prior to wire bonding said semiconductor die to a bonding surface of said lead frame, comprising:



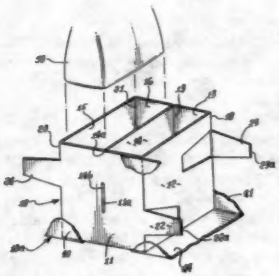
a surface heater positioned around said window and above the lead frame for raising the temperature of said bonding surface.

4,583,677

BOX INNER PARTITION PROVIDING FOUR CELLS

Gerald W. Neese, Garden Grove, and Scott M. Dever, Norwalk, both of Calif., assignors to Purex Corporation, Lakewood, Calif.

Filed Sep. 27, 1984, Ser. No. 655,038
Int. Cl.[4] B65D *5/48*
U.S. Cl. 229—15 **9 Claims**



1. A box inner partition providing four cells at least, in the box interior formed by box opposite side walls and box opposite end walls, the partition having six walls and comprising

(a) the partition folded to form opposite end walls, opposite side walls, and a divider wall, thereby providing two cells between the divider and the partition opposite end walls,

(b) and spacers carried by the partition and projecting freely endwise beyond said partition end walls to cooperate with the box end walls thereby to locate the partition in the box to define two additional cells between the partition end walls and the box end walls,

(c) said six walls interconnected by folds, to form a one-piece folded sheet and in first through sixth series sequence, said six walls, when the partition is folded, forming:

(i) the second, fourth and sixth walls extending in spaced apart parallel relation, in lateral vertical planes, the sixth wall located between the second and fourth walls,

(ii) the first, third and fifth walls extending in longitudinal vertical planes,

(iii) the spacers also extending in generally longitudinal vertical planes,

(d) one pair of spacers cut from the second wall, and another pair of spacers cut from the fourth wall,

(e) the two spacers of each pair extending at different elevation and generally longitudinally, the spacers of one pair

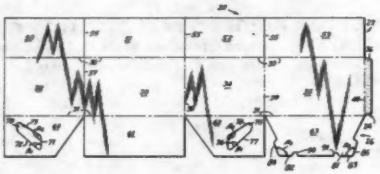
projecting in one direction respectively from the folds between the third and second walls and between the first and second walls, and the spacers of the other pair projecting in the opposite direction, respectively from the folds between the fourth and fifth walls and between the third and fourth walls, the spacers being in the same planes as are defined by the partition opposite side walls.

4,583,678

BOTTOM SPEED LOCK FOR CONTAINER

Charles P. Weimer, Jr., Danielson, Conn., assignor to International Paper Company, New York, N.Y.

Filed Nov. 30, 1984, Ser. No. 676,895
Int. Cl.[4] B65D *5/10*
U.S. Cl. 229—39 R **3 Claims**



1. A container comprising:

(a) a plurality of body panels formed of stiff, resilient and foldable sheet material including four side panels serially connected to one another along respective longitudinal fold lines;

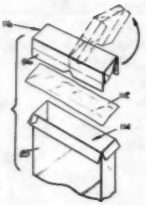
(b) a bottom closure including a pair of lock panels, a tuck panel, and a tab panel, each foldably connected to a lower end of a respective one of the body panels along a transverse fold line, each bottom lock panel being connected to one of two non-adjacent body panels, the bottom tuck panel being connected to one of the other two non-adjacent body panels, the bottom tab panel being connected to the remaining body panel, each bottom lock panel having a slot formed with at least three substantially straight edges, the first slot edge being formed relative to a line which is substantially perpendicular to the transverse fold line, the second slot edge being formed at one end of the first slot edge remote from the transverse fold line so that it is inclined from the first slot edge at a first angle of inclination, the third slot edge being formed at the other end of the first slot edge proximate to the transverse fold line so that it is inclined from the first slot edge at a second angle of inclination, the bottom tab panel having a pair of oppositely disposed corner tabs at a free edge thereof, each corner tab defined by indentations along the free edges of the bottom tab panel, each corner tab being formed with at least two connected, substantially straight edges, the first corner tab edge of each tab being formed relative to a line which is substantially parallel to the transverse fold line, the second corner tab edge of each tab being formed so that it is inclined from the first tab edge at a third angle of inclination, each slot cooperatively locking together and receiving a respective one of the corner tabs, each corner tab underlying and spanning said second angle of inclination of its respective slot, each corner tab extending beyond the first slot edge and the third slot edge of its respective slot in a direction away from said respective slot, said tab-defining indentations of each tab being at least partially received by its respective slot.

4,583,679

RESEALABLE PAPERBOARD PACKAGE

Harold D. Johnson, West Monroe, La., assignor to Manville Service Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 571,397, Jan. 17, 1984, abandoned. This application May 29, 1985, Ser. No. 738,929
Int. Cl.[4] B65D *5/68, 43/04*
U.S. Cl. 229—43 **7 Claims**



1. A vapor proof, resealable paperboard package comprising:

a base including a bottom and a plurality of base side panels extending upwardly from the bottom and defining an open upper end, each base side panel having a base side panel extension hingedly attached thereto along a fold line at the upper end of the base side panel, each base side panel extension being folded back along its fold line away from said open upper end, the memory of the paperboard biasing each said extension outwardly from the base side panel to which it is attached so that it extends at an angle thereto;

a top including a top central panel and a plurality of top side panels attached to and depending from the top central panel, said top central panel and said top side panels being secured together to form said top with an open lower end complementary to the open top end of the base;

said paperboard base and top being coated with a heat sealable, non-strippable, moisture resistant coating on all surfaces thereof;

said top being positioned over, and peripherally surrounding, the upper end of the base with the top side panels being heat sealed to the folded back base panel extensions

said coating allowing the heat seal adhering the top to the base to be broken and the top lifted from the package and, with no further heat seal and with the top repositioned on the base, producing sufficient frictional contact between said top side panels and said base panel extensions to provide, in concert with the outward bias of the base side panel extensions, a substantially vapor proof seal; and

a flexible sheet heat sealed to said open upper end of said base such that said bottom, said base side panels, and said flexible sheet define a vapor proof enclosed space.

4,583,680

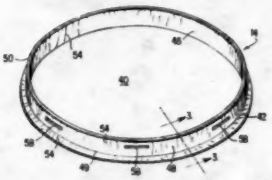
SERVING CONTAINER WITH PAPERBOARD BASE PLATE

Robert L. Gordon, Monroe; Michael Bodary, Middletown, and Andrew J. Alba, Warwick, all of N.Y., assignors to International Paper Company, New York, N.Y.

Filed Oct. 26, 1984, Ser. No. 665,191
Int. Cl.[4] B65D *45/00*
U.S. Cl. 229—45 R **6 Claims**

1. A serving container for a food product, such as a hamburger, the container formed of stiff, resilient and foldable sheet material, such as paperboard, the container formed of two parts, being an upper part and a lower part, the lower container part being in the form of a plate, the plate having an upstanding rim near its periphery, a portion of the lower container part extending radially outwardly and beyond the upstanding rim, wherein the radially outwardly portion of the plate limits

downward motion of the crown onto the plate, and wherein the upstanding rim includes spaced-apart portions of the sheet material, the outermost one of said spaced-apart portion having a radial extent greater than the radial extent the lower edge of the crown, the upper container part being crown in the form of an inverted cup, the lower edge of the crown and the upstanding rim of the plate releasably fitting together, at least one of the crown and plate being resiliently deformably to effect coupling and uncoupling of the lower edge of the crown from



the upstanding rim of the plate, the lower edge of the crown carrying tabs some of which engage complementary slots in the rim, the crown an the plate formed of paperboard, the number of tabs being greater than the number of slots,

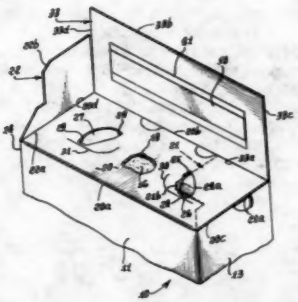
wherein the plate upstanding rim is inverted V-shaped in transverse cross-section and wherein the complementary slots are formed in the radially outermost wall of the V rim, and wherein the tabs are carried on the inner side of the lower edge of the crown, and wherein both the plate and the crown are round.

4,583,681

EXTENSIBLE HANDLE CARTON WITH LEAKAGE PREVENTING FLAP STRUCTURE

Gerald W. Neese, Garden Grove, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Sep. 10, 1984, Ser. No. 648,588
Int. Cl.[4] B65D 5/46
U.S. Cl. 229—52 A **7 Claims**



1. A carton construction comprising, in combination:

(a) the carton having upright side walls and end walls,

(b) multiple inner flaps attached to multiple of said walls proximate the upper ends thereof to fold downwardly toward closed substantially horizontal positions, for retention in said positions, with junctions between said inner flaps,

(c) and an outermost flap attached to one of said walls proximate the upper end thereof to fold downwardly toward closed, substantially horizontal position to cover said inner flaps in their downwardly folded positions, and to cover said junctions between said inner flaps,

(d) there being an elongated opening through said outermost flap,

(e) a substantially flat strip handle extending at least partly in said opening and having opposite end portions retained in said outer flap and extending beneath said outer flap,

(f) and a substantially flat closure means closing said opening beneath said handle and isolating said handle from said inner flaps,

(g) said substantially flat closure means including a first closure sheet underlying said opening and flatly attached to said outermost flap and supporting the handle end portions at the side of said first sheet furthest from the outermost flap, there being windows in said first closure sheet through which the handle passes,

(h) said substantially flat closure means also including a second and flexible closure sheet underlying the first closure sheet and attached thereto, so as to close said windows, said second closure sheet also covering the first closure sheet and retaining said handle end portions to the first closure sheet.

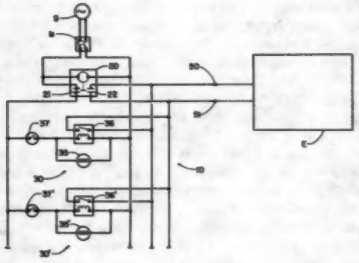
(i) said first closure sheet containing a slit extending between said windows, and beneath the major length of the handle, to enable downward deflection of said first closure sheet by finger pressure facilitating under grasping of the handle in stored position in said opening, said second closure sheet also covering said slit.

4,583,682

AIR CONDITIONING MONITORING DEVICE

Orlando Hernandez, Miami, Fla., assignor to Florida Energy Control Corp., Miami, Fla.

Filed Mar. 22, 1984, Ser. No. 592,106
Int. Cl.[4] F23N 5/20
U.S. Cl. 236—46 R **2 Claims**



1. An electric device for monitoring the usage of shared equipment, by each user, during a period of time selected by the user and outside a predetermined schedule, comprising, in operative combination:

a. electric power source means having at least two output poles connected to said device;

b. timing means including complementary normally closed and open relay means, said normally closed relay means having one relay contact connected to one pole of said source means and said normally open relay means having relay contacts connected to a suitable place on the circuit of said equipment to achieve equipment switching on and off, and both of said relay means being activated by said timing means;

c. a plurality of normally open relay means including two contacts having one of their contacts commonly connected to the contacts of said normally open relay means and each of said normally open relay means including an activating coil including two ends having one of said ends connected to one of the poles of said source means;

d. a plurality of elapsed time meters connected in parallel with said corresponding activating coils; and

e. a plurality of switch means connected in series with the other end of said coil and elapsed time meter combination

and the other end of said switch means being connected to the other contact of said normally closed relay means so that when any of said switch means is closed said corresponding elapsed time meter connected to said switch means is activated thereby measuring the time said equipment is used outside said predetermined schedule.

4,583,683

AIR CONDITIONING SYSTEM UTILIZING A KARMAN VORTEX DETECTING TYPE FLOWMETER

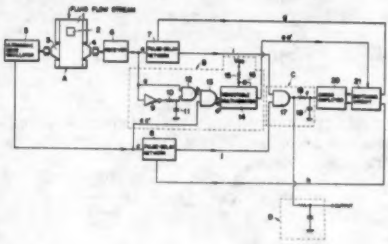
Haruhiko Adachi, Utsunomiya, Japan, assignor to Kubota Trane Ltd., Osaka, Japan

Division of Ser. No. 508,466, Jun. 28, 1983. This application Jun. 29, 1984, Ser. No. 626,109

Claims priority, application Japan, Jun. 30, 1982, 57-114397; Oct. 13, 1982, 57-179461

Int. Cl.[4] F04B *49/00*; F25B *29/00*

U.S. Cl. 236—49 7 Claims



1. An air conditioning system comprising: an air conditioning apparatus having an air blower and at least one driving motor, at least one chamber connected to the air conditioning apparatus through an air duct, a fluid flowmeter of the Karman vortex detecting type utilizing ultrasonic waves and disposed in the air duct to provide an output signal, the flowmeter including generating means for producing Karman vortices in air flowing in the duct, transmitting means for transmitting ultrasonic waves transversely through the duct and positioned downstream of the generating means, receiving means on the opposite side of the duct from the transmitting means for receiving the ultrasonic waves, means for providing a reference ultrasonic wave, means for controlling the phase difference between a received wave and the reference wave for comparison with the received wave to detect Karman vortices as a phase modulation, means for providing a delayed wave having a phase delay relative to the received wave, means for selecting the delayed wave so that it does not overlap both high and low portions of the reference wave and of the received wave or the delayed wave, and means for controlling the phase difference to provide an output signal, and control means for the air conditioning apparatus connected to the fluid flowmeter responsive to said output signal from the flowmeter to control the operation of driving motors for the air conditioning apparatus, the control means operatively connected to and for controlling one of the position of an air inlet vane to the air blower and the speed of a driving motor for driving the air blower.

4,583,684

METHOD FOR CONTROLLING A TEMPERATURE

Shin Watabe, Aichi, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 627,908, Jul. 5, 1984, abandoned. This application Aug. 13, 1984, Ser. No. 640,231

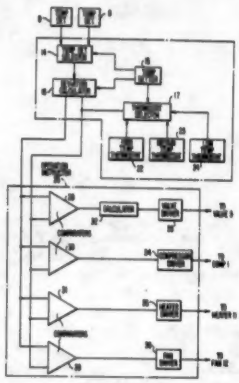
Claims priority, application Japan, Jul. 4, 1983, 58-120299

Int. Cl.[4] G05D *15/00*

U.S. Cl. 236—78 D 6 Claims

1. A method for controlling a temperature of an object to be cooled or heated by a cooling/heating apparatus to a selected temperature, wherein a controllable temperature range of the object is divided into a least three sections and in the respective temperature sections, the temperature of the object is controlled through methods suitable for the respective temperature sections, the choice of sections being dependent upon the selected temperature;

wherein the controllable temperature range is divided into three sections consisting of a low temperature region, a



medium temperature region, and a high temperature region, and wherein in said low temperature region, the temperature of the object is controlled by switching said cooling/heating apparatus ON and OFF, and in said medium temperature region, the temperature of the object is controlled by capacitor control of said cooling/heating apparatus and in said high temperature region, the temperature of the object is controlled by switching said cooling-/heating apparatus ON and OFF.

4,583,685

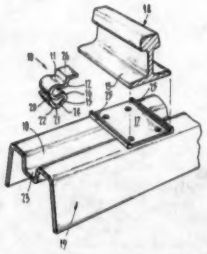
RAIL ANCHORING

Dennis M. Robb, and Peter K. Wilson, both of Croydon, Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia

Continuation of Ser. No. 446,980, Dec. 6, 1982, abandoned. This application Dec. 11, 1984, Ser. No. 680,587

Int. Cl.[4] E01B *3/16*, *9/48*

U.S. Cl. 238—54 22 Claims



1. An assembly comprising a footed rail, a sleeper, baseplate means having an underside and secured on the sleeper for locating the rail in a direction longitudinal of the sleeper, at least one rail anchoring clip means constructed of resilient material for longitudinally anchoring the rail across the sleeper, channel means extending longitudinally in the sleeper

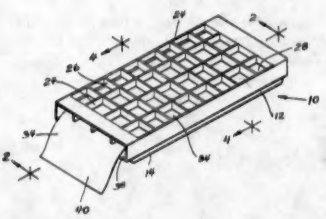
for locating the clip means in a direction lateral of the sleeper, said channel means including a bottom having an upper surface, said clip means being shaped when resiliently deformed for engaging the sleeper and anchoring the rail across the sleeper and defining a first portion that bears tightly against the upper surface of one side of the rail foot, a second portion that bears tightly against the underside of the baseplate means to compressibly anchor the rail on to the baseplate, and a third portion in co-operative engagement with the upper surface of the bottom of said channel means, said first portion being in line contact with the rail foot, said second portion being in line contact with the baseplate means, and said third portion being in line contact with the said upper surface, said line contacts being spaced apart in a direction longitudinal of the sleeper, wherein the first portion line contact is positioned further inward of the rail foot relative to the second portion line contact, and the third portion line contact is horizontally spaced outwardly of the rail from the second line contact whereby any tendency of the first portion of the clip means to slip down the upper surface of the rail foot causes the clip to tend to rotate about the second portion line contact to cause the third portion at its line contact to bear more tightly against the sleeper channel bottom upper surface to resist clip means movement the second portion being intermediate the first and third portions along the contour of said rail anchoring clip.

4,583,686

PACKAGE FOR DISPENSING VOLATILES

Edward J. Martens, and Gerald H. Schuebel, both of Racine County, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Aug. 27, 1984, Ser. No. 644,596
Int. Cl.[4] A61L *9/04*
U.S. Cl. 239—35 **10 Claims**



1. In an air-treating article of the type having an enclosure with a permeable film portion which is non-porous and becomes saturated with a volatile composition, through which a volatile composition will permeate to be dispensed to the atmosphere as a vapor, the improvement comprising:

(a) a cover member covering the permeable film from manual contact and having openings to facilitate air movement against the film;

(b) an impermeable strip under the cover member and peelably adhered to the permeable film to prevent dispensing prior to peeling therefrom; and

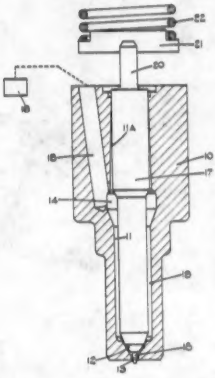
(c) a leader attached at its proximal and to one end of the impermeable strip, overlying the strip over the length thereof under the cover member, and terminating in a gripping end outside the cover member, whereby the impermeable strip may be peeled away to expose the permeable film by pulling the leader while the cover member remains in place to protect the permeable film.

4,583,687

FUEL INJECTION NOZZLE

David J. Gaskell, Upper Stanstead, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Jun. 5, 1984, Ser. No. 617,378
Claims priority, application United Kingdom, Jul. 9, 1983, 8318634
Int. Cl.[4] B05B *15/02*; F02M *61/06*
U.S. Cl. 239—118 **2 Claims**



1. A fuel injection nozzle for supplying fuel to a combustion space of an internal combustion engine, comprising a nozzle body, a blind bore formed in the body, said blind bore having a blind end, a seating defined about an outlet opening extending from the blind end of the bore, a valve member slidable in the bore, one end of the valve member being shaped for cooperation with the seating, an extension at the one end of the valve member, said extension extending with clearance through said outlet opening, a coiled compression spring action on an other end of the valve member to urge the valve member into contact with the seating, the valve member and bore over substantially half the length of the valve member from said one end thereof defining a clearance, the valve member having a portion extending from the other end thereof to said clearance, a fuel inlet passage in the body, said fuel inlet passage communicating at one end with said clearance and at its other end in use with a high pressure fuel pump, characterized in that the portion of the valve member extending from the other end thereof to said clearance is of right cylindrical form, and the portion of the bore in which said portion of the valve member is located tapers inwardly in the direction away from the seating to a position closely adjacent said portion of the valve member whereby in use, the extension can partake of sideways movement in said outlet opening.

4,583,688

HOSE-END DISPENSER

James R. Crapser, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Mar. 29, 1985, Ser. No. 717,779
Int. Cl.[4] B05B *7/24*
U.S. Cl. 239—314 **20 Claims**

1. In a hose-end valve device for controlling flow of water from a hose and liquid from an attached container, of the type having a collar secured to the container, a conduit with its upstream end engaged to a depressible valve stem of the container, a hose coupling with its longitudinal axis transverse the valve stem, and control means between the coupling and collar for regulating the flow of water through the device, the improvement comprising:

a frame affixed to the collar and forming an opening axially aligned with the longitudinal axis of the coupling;

an actuator panel hinged to the frame for movement in line with the valve stem, the panel having a mixing zone and a water outlet adjacent to such zone, the conduit being affixed to the panel with its downstream end adjacent to such zone;

a tubular member affixed to the panel upstream of the water outlet and extending axially through the frame opening and into the coupling;

an annular extension affixed to the coupling;

a camming ring rotatably attached to the extension;

axially movable means in the coupling to control water flow;

axially interacting camming surface means on the tubular member and ring whereby changing rotational positions of the ring changes the degree of insertion of the tubular member into the coupling to operate the control means; and

radially interacting camming surface means on the frame opening and ring whereby changing rotational positions of the ring moves the panel and conduit along the line of the valve stem to control dispensing from the container.

4,583,689

ROTARY SPRINKLER

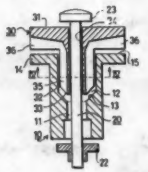
Peretz Rosenberg, Moshav Beit Shearim, Israel

Filed Jul. 17, 1984, Ser. No. 631,760

Claims priority, application Israel, Jul. 22, 1983, 69302; Jan. 20, 1984, 70739; Jun. 19, 1984, 72147; Jun. 29, 1984, 72262

Int. Cl.[4] B05B *3/04, 3/16*

U.S. Cl. 239—381 **16 Claims**



1. A rotary sprinkler comprising a nozzle having an inlet end connectable to a source of pressurized water and formed with a central axial bore having an exit end through which the water exits in the form of an axial jet, a rotor in the path of said axial jet, and means for floatingly mounting said rotor for axial, lateral and rotary movements with respect to the nozzle bore, the underface of said rotor being formed with at least one groove extending from the rotor center to its outer edge for deflecting the jet laterally of the sprinkler and for imparting a rotary motion to the rotor; the exit end of said nozzle bore being of enlarged diameter to define a cylindrical socket; said rotor including a stem depending from its underface and floatingly received within said socket, and having an outer diameter smaller than the diameter of the socket for axial, lateral and rotary movements therein; said rotor stem being formed with at least one groove extending axially thereof and merging with said groove formed in the underface of the rotor, such that said stem movable within said socket decreases the divergence of the laterally-deflected jet, decreases the friction during the rotation of the rotor, and decreases the sensitivity of the sprinkler to clogging by particles in the water.

4,583,690

ANTI-WETTING IN FLUID NOZZLES

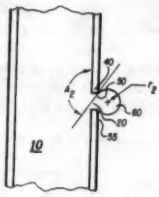
Young S. You, Fremont, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 482,123, Apr. 5, 1983, Pat. No. 4,555,062.

This application Jul. 26, 1985, Ser. No. 759,393

Int. Cl.[4] G01D *15/18*

U.S. Cl. 239—690 **5 Claims**



1. A system for spraying a fluid from a nozzle having a surface in contact with said fluid, comprising:

ions of a first type imbedded in at least a portion of the surface of said nozzle; and

a chemically specific adsorbing anti-wetting compound having ions of a second type dissolved in the fluid,

so that the portion of the surface of the nozzle imbedded with ions of the first type will selectively adsorb the anti-wetting compound from the fluid being sprayed.

4,583,691

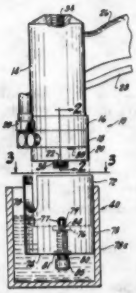
SPRAY GUN AND SOLVENT CLEANING OF SAME

Gary L. Smith, Costa Mesa, Calif., assignor to Freeman Chemical Corporation, Port Washington, Wis.

Filed Mar. 19, 1984, Ser. No. 590,798

Int. Cl.[4] B05B *15/02*

U.S. Cl. 239—112 **6 Claims**



1. In combination, a gun for dispensing a plural component reactive chemical system, said gun having a body and a spray tip with an opening at the forward portion thereof, a mixing bore within said gun and communicating with a spray tip, means within said gun for selectively admitting said plural components under pressure to said bore whereby said compo-

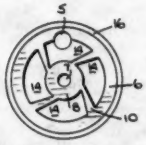
nents are mixed within said bore and are discharged from said spray tip, a solvent tank containing a solvent for the mixed reactive components and being constructed to receive at least the forward portion of said gun when said forward portion is inserted into said tank, said tank including a side wall, a bottom and a tube means perpendicularly attached to said bottom, said tube means having a diameter less than that of said spray tip and said bore whereby said tube means is inserted into said tank, said tube means being hollow and including a hole through the side wall thereof generally adjacent the bottom of said tank, wherein said means for admitting said components comprises a rod means in said gun and reciprocably movable within said bore and channel means for each of said components opening to said bore, said rod means closing said opening when it is in a first forward position and being displaced therefrom when said rod means is in a second retracted position, said tube means extending into said bore and abutting said means in its first position when said gun is inserted into said tank.

4,583,692

SELF-CLEANING ACTUATOR BUTTON FOR DISPENSING LIQUIDS WITH PARTICULATE SOLIDS FROM A PRESSURIZED CONTAINER OR BY PISTON PUMP

Robert J. Sheffler, Morganville; Michael E. Radice, Colts Neck, both of N.J., and John E. Jedzinak, Suffern, N.Y., assignors to Revlon, Inc., New York, N.Y.

Filed Feb. 24, 1984, Ser. No. 583,462
Int. Cl.[4] B05B *1/34*
U.S. Cl. 239—405 **5 Claims**



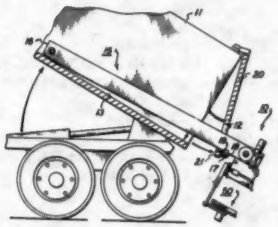
1. A valve or pump actuator for dispensing a particulate-containing fluid therethrough, comprising a solid body having
(a) a vertical axial passageway open at the bottom end for connection with the valve or pump stem of a container which controls the flow of product from the container;
(b) A chamber formed in the surface of the solid body which enhances the production of a fine spray by turbulence, having
(i) a circular channel;
(ii) a central turbulence chamber which is concentric within, and coplanar with, the circular channel; and
(iii) three or more symmetrically spaced channels connecting the circular channel and the turbulence chamber, and which are tangent to the turbulence chamber;
(c) a primary feed cylindrical conduit connecting the vertical axial passageway and the chamber for bringing product from the axial passageway to the circular channel, which is perpendicular to the plane of the circular channel and turbulence chamber;
(d) a second smaller cylindrical conduit in fluid communication with the vertical axial passageway for directing a secondary flow into the center of the turbulence chamber from the axial passageway, which is perpendicular to the plane of the circular channel and turbulence chamber; and
(e) an orifice plate which closes off the turbulence chamber so that the product can flow from the circular channel to the turbulence chamber only through the symmetrically spaced channels, the plate with an orifice having a diameter size such that the ratio of the diameter of the primary feed cylindrical conduit to said orifice diameter is at least about 2:1 plus or minus 10% whereby the diameter of the primary conduit is 90%–110% greater than that of the terminal orifice, said orifice being centered with respect to the turbulence chamber and the secondary conduit, said primary conduit being 45%–55% greater in diameter than the secondary conduit, and the ratio of the terminal orifice diameter to that of the turbulence chamber being in a range of from about 0.30 to 0.35.

4,583,693

DUMP BODY SPREADER

Kenneth A. Harder, 2480 Zurich Rd., Newark, N.Y. 14513

Filed Sep. 17, 1984, Ser. No. 651,521
Int. Cl.[4] E01C *19/00*; B60P *1/00*
U.S. Cl. 239—657 **15 Claims**



1. A spreader arranged to cooperate with a dump body having a tailgate pivotally mounted at an upper region of said body and closeable at a bottom region of said body along a lower edge of said tailgate, said spreader comprising:
a. said tailgate having an opening in a lower central region above said lower edge;
b. a conveyor arranged to extend through said opening in said tailgate and forward into said body so that in a closed position of said tailgate, said conveyor rests on said bottom of said body and extends aft through said opening above said lower edge of said tailgate;
c. a hopper arranged underneath a rear end region of said conveyor aft of said tailgate for receiving rearward flowing material from said conveyor and guiding said material in a downward flow;
d. a spinner arranged below said hopper;
e. a telescoping pipe mount arranged on said hopper for supporting said spinner at adjustable heights below said hopper;
f. means for pivoting said telescoping pipe mount and said spinner between a horizontal stowed position and a vertical operating position; and
g. means for pivotally connecting said conveyor to said tailgate so that as said tailgate pivots to an open position when said dump body dumps, said conveyor moves with said pivoting tailgate, sliding rearwardly of said body and lifting a rear region of said conveyor clear of said bottom of said body.

4,583,694

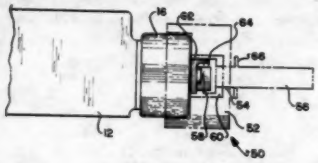
SPRAY NOZZLE AND REMOVAL TOOL

Edward A. Williams, and Donald R. Hastings, both of Elyria, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Jun. 8, 1984, Ser. No. 618,465
Int. Cl.[4] B05B *5/00*
U.S. Cl. 239—690 **12 Claims**

1. In a spray gun for use in spraying coating materials, the combination of a spray nozzle assembly and a tool for applying and removing the nozzle from the gun, comprising:
a spray nozzle shell;
a tool having an opening therein congruent with said shell,

said opening being closed at one end thereof to define a cavity; and



a rod passing through said one end of said tool, said rod having a hub thereon adapted for aligning engagement with an electrode of the spray nozzle assembly.

4,583,695

PROCESS FOR PURIFYING RECOVERY GLASS

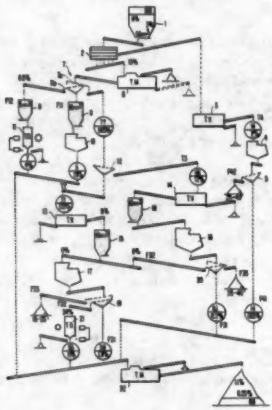
Paul Genestie, Nanterre, France, assignor to Saint-Gobain Emballage, Courbevoie, France

Continuation of Ser. No. 343,239, Jan. 27, 1982, abandoned. This application Jul. 27, 1984, Ser. No. 635,024

Claims priority, application France, Jan. 28, 1981, 81 01563

Int. Cl.[4] B02C *23/08*

U.S. Cl. 241—24 **9 Claims**



1. A process for purifying recovery glass from raw waste materials for making cullet comprising:

(a) separating the raw waste material into individual granulometric portions including at least

(1) a lower portion,

(2) a middle portion and

(3) an upper portion,

wherein the maximum granulometry of substantially the total amount of raw waste material in said lower portion is no greater than the minimum granulometry of raw waste material in said middle portion, and the maximum granulometry of substantially the total amount of raw waste material in said middle portion is no greater than the minimum granulometry of raw waste material in said upper portion;

(b) isolating each portion during the steps (c) and (d), and thereafter comingling each recoverable fraction of the raw waste material;

(c) grinding the raw waste material of at least two of said separated and isolated portions; then

(d) screening the raw waste material of each separated and isolated portion which shall have been ground thus separating a nonrecoverable fraction from said recoverable fraction.

4,583,696

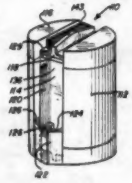
METHOD OF PRECISION WINDING A ROTOR

Philip C. Mosher, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 568,536, Jan. 5, 1984. This application Apr. 15, 1985, Ser. No. 723,968

Int. Cl.[4] H02K *15/09;* **B21F** *3/04;* **B65H** *54/08;* **H01F** *41/04*

U.S. Cl. 242—7.03 **5 Claims**



1. A method for precision winding a rotor comprising the steps of:

providing a magnetic core with axially spaced ends and an insulator at each core end;

providing a plurality of radially spaced notches in each insulator;

wrapping a plurality of nonoverlapping turns of a wire lengthwise directly about the core and over each of the insulators at the core ends by guiding each turn of a plurality of turns of the wire into a plurality of the notches to define a first layer of turns with valleys between adjacent turns, each valley having a width less than the diameter of the wire; and

wrapping a second layer of nonoverlapping turns about the core and over each of the insulators at the core ends and guiding the wire into the valleys between adjacent first layer turns,

whereby the reception of the turns making up the first layer in the notches and the turns making up the second layer in the valleys maintains the first and second layers in fixed position relative to each other and to the magnetic core and the turns are precisely located on the rotor by reason of the wire being wrapped directly on the rotor.

4,583,697

CONTROLLED COMPRESSION WINDING METHOD AND APPARATUS

Bernard Bichot, Clermont; Henri Lemaignen, Chantilly, and Bernard Louis, Liancourt, all of France, assignors to Isover Saint-Gobain, Courbevoie, France

Filed Oct. 22, 1984, Ser. No. 663,401

Claims priority, application France, Oct. 21, 1983, 83 16758

Int. Cl.[4] B65H *18/08, 18/22, 18/26*

U.S. Cl. 242—55.1 **10 Claims**

1. A method of forming rolls from strips of compressible material, comprising:

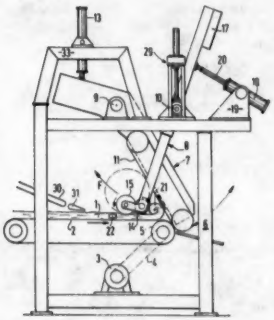
continuously transporting the strip of material into a restricted space defined by at least three elements driven with a movement which causes the strip to be rolled onto itself;

successively contacting the strip with each of these element such that rolling up of said strip occurs;

varying a position of one of the elements to direct the rolling process during the successively contacting step;

controlling the position varying step in accordance with a predetermined program as a function of the length of the strip rolled up, in such a way as to produce a predeter-

mined thickness, which may vary during the course of the rolling up of said strip according to a predetermined algorithm, whereby said strip is uniformly compressed over a predetermined length of said strip.

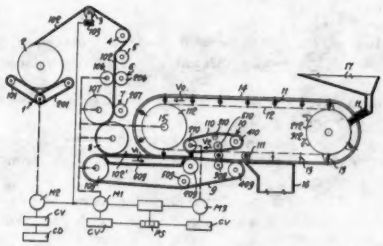


4,583,698

WEB-WINDING MACHINE FOR WINDING PAPER WEBS ONTO CARDBOARD CORES OR THE LIKE

Ugo Nistri; Romano Baroffio, and Giuseppe Ghisu, all of Genoa, Italy, assignors to Mira Lanza s.p.a., Genoa, Italy

Filed May 9, 1984, Ser. No. 610,088
Claims priority, application Italy, Sep. 26, 1983, 12630 A/83
Int. Cl.[4] B65H *19/20*
U.S. Cl. 242—56 R **15 Claims**



1. A web-winding machine for winding paper webs onto cardboard cores or the like supported only at both ends, comprising:

a station **(1)** for supplying the continuous paper web **(102)**;

a perforation station **(6)** for perforating said continuous web and creating pre-established tear-off lines;

a station **(7)** for severing the continuous perforated web into sheets **(102')** of pre-established length to be wound;

transfer means **(8)** for conveying said sheets of web to a winding station **(10)**; and

feeding means **(12-13)** to supply a tubular cardboard core **(11)** to said winding station **(10)** in synchronism with each of said sheets **(102')** of paper web,

wherein said winding station **(10)** includes a first conveyor belt **(9)** having an upper portion which is substantially co-planar with said sheets **(102')** of paper web, and rotating in the feeding direction of said sheets of paper web, a secondary conveyor belt **(110)** the lower portion of which is located above the upper portion of said first conveyor belt **(9)** and moves in the opposite direction with respect to the feeding direction of said sheets of paper web, the spacing between the upper portion of the first conveyor belt **(9)** and the lower portion of the second conveyor belt **(110)** being such that at the inlet of said station it corresponds substantially to the diameter of the cardboard core **(11)**, while at the outlet of said station it corresponds substantially to the diameter of the final roll **(111)**, said first **(9)** and second **(110)** conveyor belts being moved at different speeds such that, assuming Vo is the advancing speed of the cardboard cores **(11)**, V1 the speed of the lower portion and V2 the speed of the upper portion, the following equation will be true:

$$Vo = V1 - V2,$$

wherein said feeding means for the cardboard cores comprises an endless conveyor means **(12)** moving from a station **(17)** supplying the cardboard cores **(11)**, through said winding station **(10)** to a station **(16)** for discharging the completed rolls **(111)** and then moves back to said station **(17)** supplying the cardboard cores **(11)**, means associated with said conveyor means **(12)** and constituted by a plurality of pairs of mandrels **(13)** comprising heads **(613)** adapted to penetrate into the ends of said tubular cardboard cores **(11)** at said supplying station **(17)**, and to support said cores in a freely rotatable manner to said discharge station **(16)**, where said mandrels **(13)** are removed from the ends of the cores of the completed rolls **(111)**, thereby permitting the rolls to be discharged, and means **(14)** to control the axial movement of the heads **(613)** of the supporting mandrels **(13)** into and out of the ends of said cores **(11)**, and

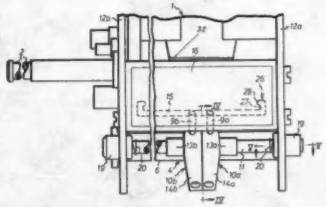
wherein said mandrels **(13)** are actuated mechanically and comprise each a tubular support **(712)**, a tubular body member **(113)** which is mounted so as to axially slidable but not rotatable in said tubular support **(712)**, a rod **(413)** which is mounted so as to be axially slidable but not rotatable in said tubular body member **(113)**, a mandrel head **(613)** rotatably mounted on the end of said rod **(413)**, spring means **(513)** arranged between said rod **(413)** and said tubular body member **(113)** to urge said rod **(413)** constantly so as to engage the head **(613)** of the mandrel into the hollow end of the tubular cores **(11)**, detent means **(713)** between said rod and said tubular body to limit the axial movement of said rod, and cam **(14)**/cam follower **(313)** means associated with said tubular body member **(113)** to cause the axial movement of said tubular body member **(113)** in a direction to engage said tubular cores **(11)** or in a direction to disengage said tubular cores **(11)**, respectively.

4,583,699

LEVEL WINDING FISHING REEL

Jardin U. Karlsson, Mörrum, Sweden, assignor to ABU Aktiebolag, Svangsta, Sweden

Filed Apr. 17, 1984, Ser. No. 601,196
Int. Cl.[4] A01K *89/04*
U.S. Cl. 242—84.42 **5 Claims**



1. A fishing reel comprising a spindle a line spool and a level-wind mechanism including an involute screw, said line spool and involute screw being rotatable by means of said spindle through a transmission, first guide means parallel to said involute screw, a slide slidably mounted on said first guide

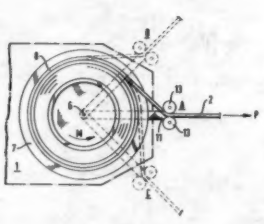
means and having means in engagement with said involute screw to be reciprocated thereby along said first guide means when said involute screw is rotated, second guide means parallel to said involute screw and to said first guide means, a pair of supports slidably mounted on said second guide means for reciprocal movement thereon between end positions, a pair of line-laying arms having opposite outer and inner ends and being fixed at the inner ends thereof to and supported by the respective one of said supports to be reciprocated thereby, said supports with said arms being movable by means of said transmission via said involute screw and said slide along said second guide means from inoperative spaced-apart end positions in which said arms are sufficiently spaced-apart in relation to each other to permit the fishing line to go substantially free from said arms, and to operative adjacent end positions, in which said arms define a relatively narrow, elongate line guiding slot, engaging and disengaging means comprising disengageable engaging means supported by said slide and said supports and including cam means for enabling said engaging means of said support to enter, from a disengaged position, into engagement with said engaging means of said slide when said supports with said arms are moved into said operative positions in relation to each other, such that said supports with said arms thereupon will be reciprocable in unison when being in said operative positions in relation to each other for guiding the fishing line during retrieval thereof on the line spool, said fishing reel further comprising third guide means parallel to said first and second guide means for guiding said arms at the outer ends thereof during said reciprocal movements, said third guide means having cooperable locking means for locking said arms releasably by mutual engagement of said arms with said locking means when said supports with said arms disengaged from said slide are in said inoperative positions, whereby movements of said supports are prevented when said arms are disengaged from said slide and said arms are locked in relation to said third guide means.

4,583,700

CABLE WINDING SYSTEM FOR ELECTRICALLY POWERED MINE VEHICLES

Aleksei Tschurbanoff, Kröpilänkatu 3C 17, 20610 Turku 61, Finland

Continuation-in-part of Ser. No. 392,024, Jun. 25, 1982, abandoned. This application Jul. 31, 1984, Ser. No. 636,154
Claims priority, application Finland, Jul. 3, 1981, 812108
Int. Cl.[4] B65H *75/38*; H02G *11/00*
U.S. Cl. 242—86.51 **4 Claims**



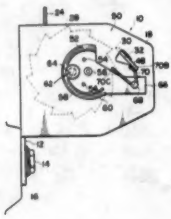
1. A cable winding system for electrically powered vehicles or working machines operating in cramped underground conditions and receiving its driving power through a flexible cable, the effective length of the cable depending on a given position of said vehicle the cable being wound onto an assembly mounted on said vehicle, whereby said cable is wound on a collector means rotating around a vertical axle disposed on the center line of vehicle and wherein a final exit point for the cable relative to said vehicle is determined by a guide means mounted on the end of an extension arm (11) swivelling concentrically to an axle (6) of said collector means said arm and said axle being pivotally relative to each other accordingly, the improvement comprising, the extension arm and the collector means forming an assembly being also jointly rotatable relative to the vehicle; and a drive means attached to an axle of the extension arm for swivelling therewith and being operatively drivingly connected to the axle of the collector means to drive said collector means.

4,583,701

WEBBING RETRACTOR

Kenji Matsui, and Fuminori Teraoka, both of Aichi, Japan, assignors to Kabushiki Kaisha Toka-Rika-Denki-Seisakusho, Aichi, Japan

Filed Nov. 9, 1983, Ser. No. 550,249
Claims priority, application Japan, Nov. 15, 1982, 57-172449[U]
Int. Cl.[4] A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **20 Claims**



1. A webbing retractor used in a seatbelt system for protecting an occupant in an emergency situation of a vehicle, which comprises:

(a) a takeup shaft for retracting an occupant-restraining webbing;

(b) a locking means moveable to a locked position for preventing takeup shaft webbing-unwinding rotation and to an unlocked position

(c) an acceleration sensor operable to move said locking means to locked position in an emergency situation of the vehicle;

(d) a transmitting means for biasing the locking means to locked position;

(e) a cam ring rotated relative to the transmitting means by rotation of the takeup shaft;

(f) a first guide portion formed in the cam ring and moving the locking means to locked position independently of the transmitting means bias until the webbing is unwound up to a first predetermined amount;

(g) a second guide portion formed in the cam ring and biasing the locking means to locked position through the transmitting means;

(h) an outlet portion formed in the cam ring and opposing the transmitting means from the first guide portion to the second guide portion when the webbing is unwound in an amount more than the first predetermined amount; and

(i) an inlet portion formed in the cam ring and returning the transmitting means to the first guide portion to put the locking means in locked position when the webbing is retracted on to the takeup shaft a second predetermined amount; whereby the webbing is free to unwind in an ordinary driving condition of the occupant normally wearing the webbing and the webbing is prevented from being unwound when the webbing is unwound in the first predetermined amount or more.

4,583,702

LIGHTNING PROTECTION FOR AIRCRAFT RADOMES

Roger E. Baldwin, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 2, 1983, Ser. No. 557,444

Claims priority, application United Kingdom, Dec. 14, 1983, 8235530

Int. Cl.[4] B64D *45/02*

U.S. Cl. 244—1 A 2 Claims

1. An aircraft radome having a plurality of sacrificial conductive narrow metal strips attached to its surface whereby the radome can be connected electrically to the main structure of an aircraft, wherein the metal strips have holes formed in them positioned and dimensioned such that the remaining areas of metal are all of substantially the same width and there are substantially no localized regions of considerably increased amounts of metal, and such that at no position on a strip is there sufficient metal present to cause structural failure of the radome due to the vaporization of a region of the strip arising from a lightning strike on that region of the strip.

4,583,703

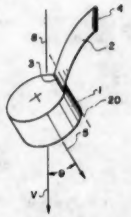
ONE FIN ORIENTATION AND STABILIZATION DEVICE

Roy W. Kline, Newton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 358,946, Mar. 17, 1982, abandoned. This application Sep. 24, 1984, Ser. No. 653,570

Int. Cl.[4] F42B *13/32, 15/053, 25/20*

U.S. Cl. 244—3.24 7 Claims



1. A rotating submunition including a target sensor means to search a circular area on the ground in a swath, with a nearly constant lacing distace, in lunar motion at a scan rate equal to the rotational rate of the submunition, said submunition comprising an aluminum cylindrical shaped body having a defined line of sight axis with sensor means at the bottom thereof facing the ground, said body further including a flexible wing element having relative aerodynamic lift, attached near the top on the side of the said submunition, connected at a curved surface to said submunition, said wing comprised of a double layer of nylon cloth of 3 oz./yd^2 density, of length dimension 1.5 body diameters and width of 0.6 diameters, of said submunition, including a tip weight along the entire width of the wing's chord, placed on top of said wing near the edge, with the weight's center of gravity at the one-quarter chord position for stability in the start up phase, the weight being 2 to 5% of the submunition body weight, for orientating and stabilizing the flight of said submunition, said wing having sufficient aerodynamic lift moment whereby with said body dropped in flight in a relatively straight descent direction without initial spinning of said body substantially, said wing is acted on aerodynamically and in turn tilts said body sight axis with respect to said descent direction and further rotates said body in lunar motion about said descent direction at a steady state velocity, said wing either rotating the body when beginning from essentially zero rotation in a dead drop up to the steady state velocity, or slowing rotation down to the steady state amount during descent if originally larger, no further energy needed to maintain the steady state spinning other than the aerodynamic action alone during descent acting on the wing, there being no degradation of the spin rate over time, said lunar motion enabling said target sensor to scan approximately once per each revolution in the pattern of a swath along the ground, following a path which has the geometry of a logarithmic spiral.

4,583,704

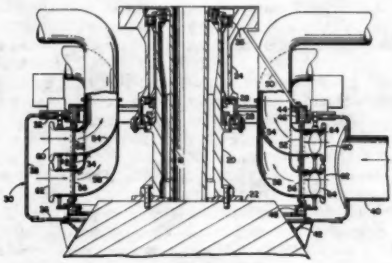
PNEUMATIC SYSTEM STRUCTURE FOR CIRCULATION CONTROL AIRCRAFT

Timothy A. Krauss, Harwinton; Stephan Roman, Shelton, and Robert J. Beurer, West Haven, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1983, Ser. No. 565,433

Int. Cl.[4] B64C *27/12*

U.S. Cl. 244—17.11 1 Claim



1. In a pneumatic system for an aircraft using a circulation control rotor, said aircraft having a helicopter rotor assembly including drive means connected to rotor blades, said pneumatic system including a compressed air storage chamber surrounding said drive means and having a top wall, a bottom wall, an inner circumferential wall and an outer circumferential wall, and ducting for conducting air from said storage chamber to said rotor blades, characterized in that said top wall, bottom wall and outer circumferential wall are mounted in a stationary manner relative to said helicopter airframe, said inner circumferential wall being freely rotatable with respect to said top, bottom and outer circumferential walls, said ducting being connected to said inner circumferential wall radially inward from said wall and between said wall and said drive means and also being connected to said blades, said inner circumferential wall including a first level of passageways through which air is admitted to said ducting and the leading edge of said rotor blades and a second level of passageways through which air is admitted to said ducting and the trailing edge of said rotor blades.

4,583,705

FLOOR STAND

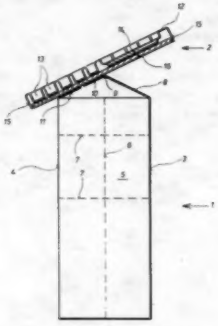
Paul Schmitt, Lauterbach, Fed. Rep. of Germany, assignor to Gustav Stabernack GmbH, Fed. Rep. of Germany

Filed Oct. 24, 1984, Ser. No. 664,259

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1983, 8330781

Int. Cl.[4] A47F *1/00*

U.S. Cl. 248—174 **8 Claims**



1. A floor stand for presenting merchandise comprising:

a tubular leg of folding material, said leg having a front wall, a rear wall, two side walls and a roof panel;

each of said walls of said leg being joined to the adjacent wall along a longitudinal bending line and each of said walls of said leg having at least one transverse fold line;

each of said two side walls having a longitudinal fold line;

said roof panel comprising at least one piece being joined to each of said front and rear walls along a transverse bending line and having a transverse fold line which runs parallel to the planes of said front and rear walls;

a device for the housing and presentation of merchandise connected to said leg, said device having a base an end face, and a connecting plate, said base having an upper surface and a lower surface and said end face encircling said base and extending downwardly such that said lower surface of said base and said end face define a space, said connecting plate being inserted into said space to so join said roof panel to said lower surface of said base that the upper portion of said leg proximate said roof panel closely abuts said base when said leg is folded flat along said longitudinal fold lines and said longitudinal bending lines, and said connecting plate so joining said base to said roof panel that said leg is folded flat and unfolded by pivoting said housing device relative to said leg.

4,583,706

MOUNTING AND STOWING ARRANGEMENTS FOR ROLLING DOORS

Martin H. Whitehouse, Northmead, Australia, and Robert L. Combs, Huntiagton Beach, Calif., assignors to Byrne & Davidson Doors (N.S.W.) Pty. Limited, Revesby, Australia

Filed Jul. 9, 1982, Ser. No. 396,873

Claims priority, application Australia, Jul. 10, 1981, PE9694

Int. Cl.[4] A47H *1/14*

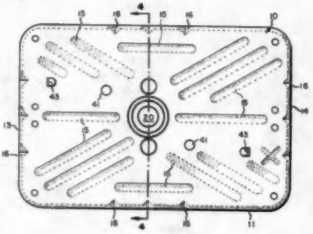
U.S. Cl. 248—251 **5 Claims**

1. A bracket for use in mounting a roller door assembly to a wall, said bracket comprising:

a rectangular plate having two side flanges and two end flanges, and having bearing means for provision of support to a drum or end drum of a rolling door, said bearing means defining an axis which is parallel to said flanges,

one end flange of said plate being at a distance from the bearing means and having apertures therein for receiving mounting means for mounting the plate to a wall with the flange in engagement therewith with the bearing means cantalevered at said distance from the wall,

the other end flange being at another distance from the bearing means and having apertures therein for receiving mounting means for mounting the plate with the flange in



engagement with the wall whereby the bearing means may be cantilevered at said other distance from the wall,

where either one of said end flanges is to be used for mounting said bracket by mounting means, and means on said bracket for mounting other structure associated with the roller door mounted thereon.

4,583,707

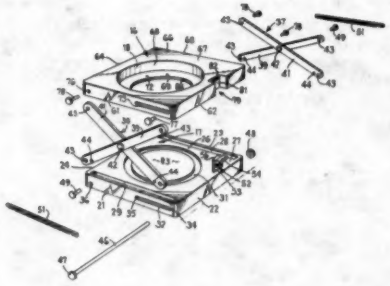
STORAGE HOLDER FOR A CONTAINER

Kenneth J. Anderson, Dowagiac, Mich., assignor to Assembled Components Company, Inc., Coloma, Mich.

Filed Sep. 18, 1984, Ser. No. 651,724

Int. Cl.[4] E04G *3/00*

U.S. Cl. 248—293 **16 Claims**



1. A collapsible holder for a container, comprising:

a plate-like base member having a surface thereon and mounting means for supporting said base member so that said surface is oriented to face upwardly;

a plate-like support member having means defining a hole therethrough along an axis perpendicular to said upwardly facing surface on said base member;

yieldable force generating means interconnecting said base member and said support member for continually urging said support member and base member from a first portion wherein said base member and support member are in a mutually adjacent relation with little or no space therebetween being extant to a second position vertically spaced from each other while maintaining said upwardly facing relation of said one surface, said yieldable force generating means including linkage means for guidingly interconnecting said base member and said support member, and spring means for urging a separation of said base member and said support member guided by said linkage means,

said linkage means including a pair of lateral spaced first links each pivotally secured at one end thereof to said base member and for movement about a first common axis, a second pair of laterally spaced second links each pivotally secured at one end thereof to said base member and for movement about a second common axis parallel to said first axis, pivot means pivotally securing said first links to said second links at the midportion thereof, the other ends of each said first link and said second link being pivotally secured to said support member and for movement about respective and spaced common axes parallel to said first and second common axes, one of said common axes on said base member and the common axis on said support member located thereabove being mounted in an elongated slot to enable each said common axis to move toward and away from the other of said common axes;

releasable latch means for holding said base member and said support member in said first position;

whereby a release of said latch means will enable said force generating means to urge a separation of said base member and said support member to said second position, a container resting on said upwardly facing surface extending through and being encircled by said means defining a hole in said support member so that said container is stabilized thereby.

4,583,708

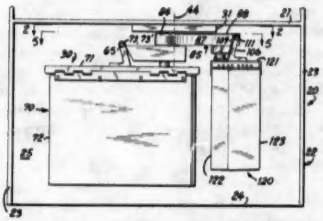
HANGER EQUIPMENT FOR PRINTED MATTER SUCH AS TELEPHONE DIRECTORIES

Casey J. Wieczorek, Basking Ridge, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jan. 20, 1984, Ser. No. 572,484

Int. Cl.[4] B42D *17/00*

U.S. Cl. 248—447 **2 Claims**



1. A printed matter hanger mechanism comprising a base securable to the underside of raised support means, first and second arms disposed beneath said base with the first arm being above the second arm, the projection of the axes of the arms forming angle with each other; and with the inner ends of both arms being vertically aligned so that a common verticle axis passes through both such ends, swivel means providing a coupling of such base with each of said arms so that they are independently pivotally movable horizontally about said axis, said swivel means comprising a vertical support shaft extending downward from said base, said vertical axis being the axis of said shaft, bearing means mounting the inner ends of said first and second arms on said shaft so that they are pivotally movable independently about said vertical axis while being constrained from movement in their other angular coordinates, a torsion spring disposed around said shaft and having opposite ends coupled to respectively said first and second arms for urging them to rotate in opposite directions around said shaft, and stop means positionally fixed in relation to said base and operable to set a limit to the rotation of each of said arms in the direction in which such arm is urged to rotate by such spring, first and second binders each comprising a spine and covers for printed matter, hinge means providing hinge couplings between said first and second binders and the outer ends of, respectively, said first and second binders are respectively rotatable about first and second horizontal axes at the outer ends of, respectively, said first and second arms and disposed transverse to the respective centerlines thereof, each of said binders being vertically movable by such rotation thereof between first and second positions about 180° apart and, at which, respectively, each binder is suspended from its corresponding arm and is supported from underneath by such arm and the centerline of one of said binders being at an angle with respect to the arm supporting said binder.

4,583,709

VALVES

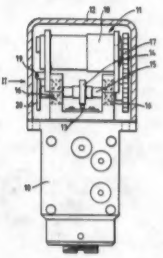
Richard Ward, Worsley, England, assignor to Dobson Park Industries P/C, Nottingham, England

Filed Jun. 14, 1984, Ser. No. 620,502

Claims priority, application United Kingdom, Jun. 14, 1983, 8316137

Int. Cl.[4] F16K *31/06*

U.S. Cl. 251—129.15 **12 Claims**



1. An electrically operable valve assembly useable in a mine roof support comprising: a valve means;

an electrical operating means having an electromagnet, said operating means being controllingly connected to said valve means and said operating means being driveable to function as a generator by said valve means;

means for preventing reverse current flow when said operating means functions as a generator comprising: a transistor with a collector, an emitter, and a base, one of the collector and emitter being connected to a first side of the electromagnet, said base being connected to one side of a resistor and the other side of the resistor being connected to a second side of the electromagnet;

power supply and return lines for energizing said electromagnet, the other of the collector and emitter being connected to one of supply and return lines, and the other of said supply and return lines being connected to said second side of said electromagnet; and

a backup short circuiting means connected across said other of the collector and emitter and the other of said supply and return lines, for short circuiting any reverse current.

4,583,710

ELECTROMAGNETIC VALVE FOR PULSED MOLECULAR BEAM

Thomas E. Adams; Edward R. Grant; Bennett H. Rockney, and Richard J. S. Morrison, all of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed May 10, 1982, Ser. No. 376,811

Int. Cl.[4] F16K *31/02*

U.S. Cl. 251—129.10 **16 Claims**

1. An electromagnetically operated valve for generating a high pressure molecular beam gas pulse having an extremely short, accurate, controllable pulse duration on the order of 70 microseconds, comprising:

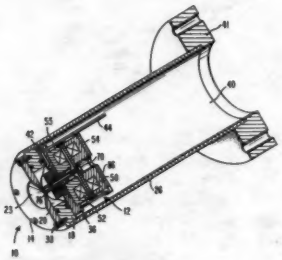
an aperture plate including a valve seat surrounding an

expansion aperture in said plate, said expansion aperture comprising a conical hole terminating at a sharp edge on one surface of said aperture plate, said sharp edge serving as said valve seat;

a valve head moveable with respect to said aperture plate in a first direction to engage said valve seat to close said expansion aperture and in a second direction to disengage said valve seat to open said expansion aperture;

a sample gas reservoir surrounding said valve head and adapted to receive a sample gas under high pressure for controlled dispersion through said expansion aperture upon opening of said expansion aperture;

a valve actuator assembly to controllably move said valve head in said second direction to open said expansion aperture to permit a pulse of gas to flow therethrough from said reservoir, said expansion aperture allowing said sample gas to be dispersed substantially without delay or pressure drop, thereby to produce a gas pulse having an extremely short rise time, and to controllably move said valve head in said first direction to close said expansion aperture, said assembly comprising a light weight valve shaft connected to said valve head, first and second coils mounted in spaced-apart opposition to define a gap therebetween, and light weight driver means connected to said valve shaft and mounted in said gap to move therethrough



in response to energization and deenergization of said coils; first and second drive circuit means producing first and second drive pulses for alternately and selectively energizing and deenergizing said coils to move said driver means through said gap, thereby to move said valve shaft and said valve head alternately in said first and second directions to close and open said expansion aperture, energization of said second coil producing a magnetic field to move said driver means to open said expansion aperture, deenergization of said second coil collapsing said magnetic field to move said driver means in a direction to close said expansion aperture, and subsequent energization of said first coil holding said expansion aperture closed; and

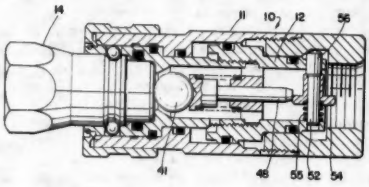
selectively variable timer circuit means for regulating said first and second drive circuit means to produce drive pulses to regulate the time and duration of opening said expansion aperture and to control the intensity and duration of the pulse of gas emitted through said expansion aperture, said drive circuit means for said second coil producing drive pulses of sufficient amplitude and of sufficiently short duration to fully open said expansion aperture to allow dispersion of a short, high pressure pulse of sample gas from said reservoir, and thereafter to close said expansion aperture to produce a molecular beam pulse of approximately 70 microseconds' duration.

4,583,711

RIGID MOUNT COUPLER WITH FLOW CHECK STOP

Lyle R. Johnson, Minneapolis, Minn., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jun. 28, 1985, Ser. No. 749,846
Int. Cl.[4] F16L *37/28*
U.S. Cl. 251—149.6 **6 Claims**



1. A quick coupler for fluid interconnections, comprising a housing having a bore therein,

a body member axially movable in said housing bore between an outer, disconnect position and an inner coupled position,

detent means for releasably retaining said body member in said inner and outer positions,

locking means cooperable between said body member and said housing for releasably securing a nipple in said body member,

a valve and valve seat in said body member for preventing fluid flow therethrough, valve support means movable with and mounting said valve for axial movement relative to said body member,

a spring outwardly biasing said valve support means and said valve to a closed position,

an elongated member on said valve support means extending toward the inner end of said body member, and

stop means at said inner end of said body member movable between radially inner and outer positions, respectively into and out of the path of movement of said elongated member for preventing and allowing rearward movement of said elongated member and thereby of said valve member, said stop means comprising,

a radially disposed stop support slidably mounted at the inner end of said body member for axial movement with said body member between inner and outer positions and for radial movement relative to said body member, said stop support being disposed in a larger bore of said housing in said inner position and in a smaller bore of said housing in said outer position, said housing having a taper surface between said larger and smaller bores,

a stop member on said support mounted for movement with said support and adapted to be positioned in and out of the path of movement of said elongated member when said stop support is positioned respectively in said larger and smaller bores of said housing, and

spring means biasing said stop support toward said larger and smaller bores and said taper surface of said housing.

4,583,712

EVAPORATOR LIFT

David W. Wilks, 210 W. Palfrey, San Antonio, Tex. 78223

Filed Oct. 29, 1984, Ser. No. 666,153
Int. Cl.[4] B66F *13/00*
U.S. Cl. 254—89 R **11 Claims**

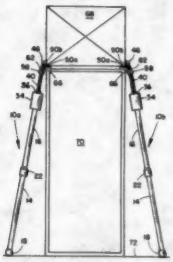
1. Apparatus for lifting or supporting an object, such as an evaporator coil cabinet, comprising:

a leg member;

a platform adapted for engagement with an edge of said object;

a platform shaft connected on a first end to said platform, said platform being rotatable about said first end of said

shaft, said apparatus further comprising means for maintaining said platform in flush engagement with said edge of said object comprising support means axially slidable along said shaft for abutting an underside of said platform and a leveling nut in threaded engagement with said shaft



for abutting an underside of said support means, said shaft having a second end adapted for telescopic engagement with said leg member; and

means for moving said platform upwards or downwards relative to said leg member.

4,583,713

PANTOGRAPH JACK APPARATUS

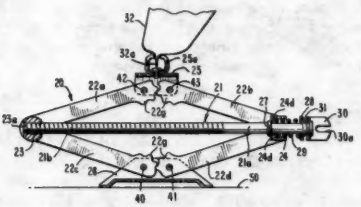
Kenichi Fukura, Toyota; Kazuhisa Nagata, Okazaki, and Nobuhiro Yamauchi, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Jun. 28, 1985, Ser. No. 749,673

Claims priority, application Japan, Jun. 29, 1984, 59-136088

Int. Cl.⁴ B66F *3/08*

U.S. Cl. 254—126 **7 Claims**



1. A pantograph jack apparatus for elevating a motor vehicle body, comprising:

a. a base plate;

b. a supporting plate;

c. a shaft member having a threaded portion at one end and a non-threaded portion at the other end;

d. a connecting nut cooperating with and threaded on said threaded portion of said shaft member;

e. a connecting bearing rotatably mounted on and axially movable on said non-threaded portion of said shaft member;

f. first and second upper arm members each having one end pivotally connected to said supporting plate, the other end of said first upper arm member being pivotally connected to said connecting nut and the other end of said second upper arm member being pivotally connected to said connecting bearing;

g. first and second lower arm members each having one end pivotally connected to said base plate, the other end of said first lower arm member being pivotally connected to said connecting nut and the other end of said second lower arm member being pivotally connected to said connecting bearing;

h. first and second stop portions fixedly connected to said non-threaded portion of said shaft member on axially opposite sides of said connecting bearing, said connecting bearing being axially movable between said stop portions, and said stop portions being separated by a predetermined distance so that said supporting plate is in a desired lowered position for storage when said connecting portion abuts against said first stop portion and said supporting plate is in a desired raised position for engaging said motor vehicle body when said connecting bearing abuts against said second stop portion; and

i. means for preventing said connecting bearing from moving back toward said first stop portion after said connecting bearing is moved toward said second stop portion by raising said supporting plate.

4,583,714

VEHICLE MOUNTABLE CABLE REEL APPARATUS

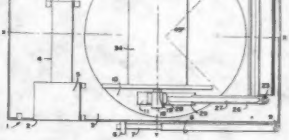
Lance D. Ridgway, Carlsbad, N. Mex., assignor to Hy-Reel Machinery, Inc., Carlsbad, N. Mex.

Continuation of Ser. No. 134,236, Mar. 26, 1980, Pat. No. 4,371,147. This application Jan. 31, 1983, Ser. No. 462,647

The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.

Int. Cl.⁴ B66D *1/38*

U.S. Cl. 254—326 **18 Claims**



1. A vehicle mountable hydraulic cable reel apparatus comprising:

a cable reel bed comprising bed support frame members having rollers mounted thereon;

a turntable rotatably supported on the rollers;

a turntable operating motor mounted on the bed, and means connecting said motor to the turntable to turn the turnable;

first and second vertical stanchions mounted on said turntable and extending upwardly therefrom;

a first reel support assembly, and means connecting said first reel support assembly to said first vertical stanchion;

a second reel support assembly, and means connecting said second reel support assembly to the second vertical stanchion;

a reel motor, and means connecting said reel motor to one of said reel support assemblies, whereby a cable reel supported between the first reel support assembly and the second reel support assembly may be driven by the reel motor, a horizontal roller with vertical guide rollers upwardly disposed at remote end of said horizontal roller with parallel truss means connecting said horizontal and vertical rollers to said first and second vertical stanchions to support the horizontal roller parallel to the axis of the cable reel and spaced radially thereform for supporting and guiding cable extending from the cable reel, wherein the first reel support assembly comprises a base mounted on an upper end of the first vertical stanchion, an upright frame member connected to the base, a sliding block mounted for reciprocal movement on the base, means connected to the frame member and the block for translat-

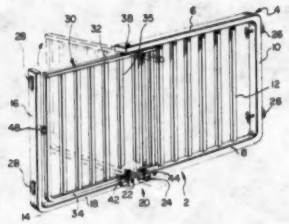
ing the block, the block having an opening for receiving an end of a cable reel shaft, and wherein the block opening comprises a U-shaped upward opening in one end of the block so that a reel shaft may be lowered into the opening.

4,583,715

SAFETY GATE

John Wright, #93-1081 Borden Side Rd., Ottawa, Ontario, Canada (K2C 3P4)

Filed Nov. 14, 1984, Ser. No. 671,420
Claims priority, application Canada, Sep. 14, 1984, 463234
Int. Cl.[4] E04H *17/16*
U.S. Cl. 256—24 **16 Claims**



1. A safety barrier for a passageway with spaced vertical side walls or frames, the barrier comprising:

(a) a barrier element having spaced, parallel upper and lower frame elements joined at corresponding ends to a vertical side frame element,

(b) a plurality of spaced barrier rungs extending between the upper and lower frame elements,

(c) a frame assembly having a vertical side frame element and a lower frame element joined at their ends to provide an "L"-shaped configuration, the free end of this lower frame element secured to the free end of the lower frame element of the barrier element for relative axial slidable movement,

(d) locking means associated with the lower frame elements for releasably locking them in selective relative positions,

(e) a gate element mounted on the upper frame element of the barrier element and the lower frame element of the frame assembly for sliding axial movement in conjunction with the frame assembly relative to the barrier element and for pivotal movement between closed position with the plane of the gate element parallel to that of the barrier element, and opened position to permit passage of a person through the barrier, about a vertical axis extending between the upper frame element of the barrier element and the lower frame element of the frame assembly, the gate element being of a size and position when in closed position to obstruct passage between the barrier element and the side frame element of the frame assembly, and when in open position to permit such passage,

(f) lock means associated with the gate element to releasably lock the gate in closed position, and

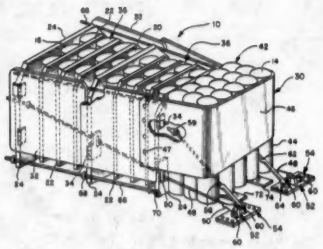
(g) means associated with the safety barrier and adjustable to bear against the side walls or frames to secure the barrier in position across a passageway when the frame assembly and barrier element are locked in a predetermined position.

4,583,716

UNIVERSAL ANCHOR ASSEMBLY FOR IMPACT ATTENUATION DEVICE

Barry D. Stephens, Citrus Heights; Peter B. Morehead, Sacramento, and James B. Welch, Placerville, all of Calif., assignors to Energy Absorption Systems, Inc., Chicago, Ill.

Filed May 19, 1982, Ser. No. 379,868
Int. Cl.[4] A01K *3/00*; E01F *15/00*
U.S. Cl. 256—13.1 **7 Claims**



1. In a reusable impact attenuation device of the type which includes a rigid backing member adapted to be positioned adjacent a fixed structure, a plurality of buffer elements positioned in an ordered array extending forwardly of the backing member for absorbing and dissipating energy, a plurality of diaphragm members interposed in the array and extending laterally outward of the array at spaced intervals, a plurality of fender panels pivotally coupled to the laterally extending ends of the diaphragm members and partially overlapping the fender panels coupled to the succeeding diaphragm members, and means for collapsibly interconnecting the backing member and the diaphragm members, the improvement comprising:

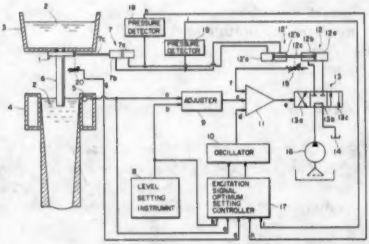
a pair of laterally spaced anchor assemblies connected to the interconnecting means at the forward end of the impact attenuation device, the anchor assemblies being adapted for fixing to the ground and being symmetrical, identical, and interchangeable with each other.

4,583,717

METHOD FOR POURING MOLTEN METAL

Yoshii Hasegawa; Takeshi Tsuruta; Takao Kohgo; Masahiro Nakamura, and Tohru Kishida, all of Wakayama, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jun. 19, 1984, Ser. No. 622,123
Claims priority, application Japan, Jun. 20, 1983, 58-111441
Int. Cl.[4] B22D *41/00*
U.S. Cl. 266—44 **12 Claims**



1. A method for pouring molten metal into a vessel and maintaining the level of molten metal at a predetermined level comprising the steps of:

providing a pouring nozzle having a sliding member to vary the extent of opening of the nozzle,

periodically changing the extent of opening of the nozzle at a predetermined frequency in response to an excitation signal,

measuring the level of molten metal and comparing the measured level to the predetermined level to provide a control signal, indicative of the differences between the levels,

superimposing the control signal on said excitation signal to adjust the width of movement of said sliding member.

4,583,718

NOZZLE FOR CUTTING BEARD REMOVAL

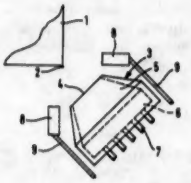
Horst K. Lotz, Wiesbaden-Delkenheim, Fed. Rep. of Germany, assignor to Aute Gesellschaft fur autogene Technik mbH, Zurich, Switzerland

Filed Jun. 6, 1983, Ser. No. 501,517

Claims priority, application European Pat. Off., Jun. 9, 1982, 82105052.3

Int. Cl.⁴ B23K *7/06*

U.S. Cl. 266—48 **9 Claims**



1. A nozzle for the removal of a cutting beard where by means of additional heat supply the beard is liquified and blown away by the kinetic energy of a gas jet, comprising an upper and a lower nozzle plate with fuel gas discharge holes and an oxygen discharging slot formed in between wherein through said oxygen slot at its longitudinal opposite ends an increased oxygen quantity is discharged.

4,583,719

MACHINE TOOL FOR STAMPING, NIBBLING AND THERMAL CUTTING AND THE LIKE

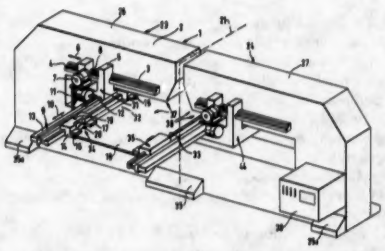
Hans Klingel, Moglingen, Fed. Rep. of Germany, assignor to Trumpf GmbH & Co., Ditzingen, Fed. Rep. of Germany

Filed Apr. 16, 1984, Ser. No. 600,487

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314748

Int. Cl.⁴ B23K *7/10*

U.S. Cl. 266—72 **10 Claims**



1. In a machine tool for flat workpieces, the combination comprising:

A. at least one work station having a tool for working upon a workpiece supported in the machine tool;

B. a first workpiece guidance assembly including a workpiece holding device having releasable workpiece engaging elements for holding the workpiece, said device being movable in at least one direction relative to said work station and being adapted to be engaged with a workpiece to effect movement thereof;

C. a second workpiece guidance assembly including a workpiece holding device having workpiece engaging elements for holding a workpiece and movable in at least one direction relative to said work station, said first workpiece holding device being movable both concurently with and independently of said second workpiece holding device;

D. drive means for effecting movement of said workpiece holding devices; and

E. control means for said work station and said drive means.

4,583,720

APPARATUS FOR THE ZONE-ANNEALING OF A WORKPIECE CONSISTING OF A HIGH-TEMPERATURE MATERIAL

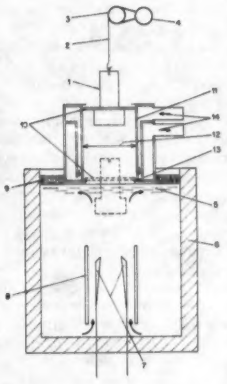
Roland Künzli, Mellingen; Günther Schröder, Birmenstorf, and Robert Singer, Baden, all of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Oct. 24, 1984, Ser. No. 664,389

Claims priority, application Switzerland, Oct. 26, 1983, 5799/83

Int. Cl.⁴ C21D *9/00*

U.S. Cl. 266—81 **6 Claims**



1. An apparatus for the zone-annealing of a workpiece made of a high temperature material, comprising:

means for vertically raising and lowering said workpiece,

a vessel defining a salt bath;

means in said vessel for heating said salt bath;

means in said vessel for guiding said salt bath to have a vertical flow path along a central part of said vessel;

a cooling body positioned immediately above said vessel, and having a vertical passage therethrough;

means for flowing cooling air through said cooling body;

a floating insulating cover closing off a top of said salt bath around said cooling body;

a covering screen having an orifice for insertion of said workpiece and an outer periphery having the dimensions of said vertical passage; and

an inwardly projecting edge at a bottom of said vertical passage for engaging said covering screen,

whereby said covering screen can slide vertically downward with said workpiece to said projecting edge through said

vertical passage as said workpiece is lowered therethrough.

4,583,721

MOLTEN METAL DISCHARGING DEVICE

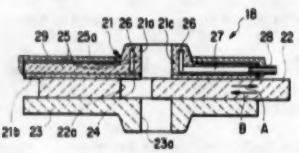
Kazumi Arakawa, Anjo; Masuo Sugie, Tokoname; Takashi Watanabe, Chiryu; Takumi Nishio, Toyota; Toshio Kawamura, Takahama; Tsutomu Nagahata, Osaka, and Takashi Matsushita, Wakayama, all of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1984, Ser. No. 581,359

Claims priority, application Japan, Nov. 2, 1983, 58-206479

Int. Cl.⁴ B22D *41/08*

U.S. Cl. 266—220 **26 Claims**



1. A slide gate device for controlling discharge of molten metal from a container accomodating the molten metal therein, comprising:

a stationary plate of refractory material adapted to be attached below a bottom portion of the container and having a molten metal passage bore formed therein for permitting the molten metal from the container to be discharged therethrough, and

a slide plate of refractor material slidable along a lower face of the stationary plate and adapted to open or close the passage bore by being slidably displaced relative to the stationary plate,

wherein the stationary further comprises

a main body wherein a major voluminal proportion of the stationary refractory plate including substantially all of a circumferential wall part of the passage bore comprises porous gas permeable refractory materials, thereby enabling enhancing of a heat-insulating property of the stationary plate so as to avoid cooling the circumferential wall of the passage bore and thus avoid solidfication of the metal in the passage bore; and

a thin layer of dense, substantially gas impermeable refractoy material secured to a lower face of the main body, a lower face of the thin layer constituting a lower face of the stationary plate and which is in sliding contact with an upper face of the slide plate.

4,583,722

NITROGEN DIE CYLINDER

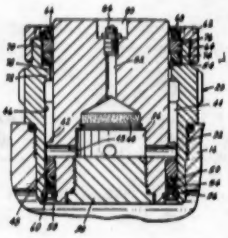
Bernard J. Wallis, 25315 Kean Ave., Dearborn, Mich. 48124

Filed May 17, 1984, Ser. No. 611,471

Int. Cl.⁴ F16F *9/02*; F16J *15/32*

U.S. Cl. 267—119 **4 Claims**

1. In combination a manifold having a pressurized nitrogen chamber for applying a biasing force to a die member that is vertically displaceable in response to vertical reciprocation of the plate of a press in which the die member is mounted, a cylinder mounted on said manifold, said cylinder having a bore, the lower end of which communicates with the pressurized chamber of the manifold, a piston slideably mounted in said bore and biased upwardly therein by the manifold pressure at the lower end thereof, the lower end portion of the piston having a lower, bottom high pressure annular seal thereon engaging said bore, the portion of the piston above said bottom seal being of a reduced smaller diameter than said bore so as to define therebetween an annular chamber having a cross sectional area substantially smaller than the cross sectional area of the piston, said cylinder having an opening at its upper end through which the reduced diameter portion of the piston projects, an upper annular high pressure seal in said opening engaging the outer periphery of the reduced diameter portion of the piston, said piston having a central chamber therein communicating with said annular chamber, said lower seal preventing communication of said annular and central chambers with said manifold chamber and said upper seal preventing communication of said annular and central chambers with the atmosphere surrounding the cylinder, said seals being of the type whose sealing characteristics are enchanced when subjected to relatively high axial pressures in an upwardly direction and means for constantly applying an axial upward pressure to said upper seal at a value below the pressure in the manifold chamber.



4,583,723

ELASTICALLY DAMPING DEVICE FOR SUSPENSION OF ENGINE

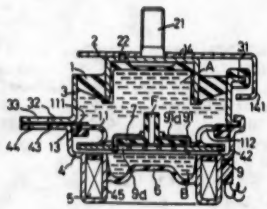
Isao Ozawa, Inazawa, Japan, assignor to Toyoda Gosei Co., Ltd., Aichi, Japan

Filed Jun. 7, 1984, Ser. No. 618,352

Claims priority, application Japan, Jun. 10, 1983, 58-104610; Jun. 10, 1983, 58-104611; Jun. 10, 1983, 58-104612; Sep. 16, 1983, 58-171556; Sep. 19, 1983, 58-172617

Int. Cl.⁴ F16M *5/00*

U.S. Cl. 267—140.1 **12 Claims**



1. An elastically damping device for the suspension of an engine of a vehicle having driving conditions, comprising:

a first elastically deformable wall and a second elastically deformable wall which are connected to each other to define a closed enclosure;

one of said deformable walls being connectable to an engine and being deformable due to vibrations of the engine;

a partition member dividing said enclosure into a first fluid chamber and a second fluid chamber;

said first fluid chamber and said second fluid chamber being filled with fluid;

at least one portion of said partition member being formed into a movable plate which is movable in directions to lower the inner pressure of said fluid chambers;

a restricted passageway extending through said partition member, said passageway communicating said first and

second fluid chambers for flowing therethrough with high flowing resistance the fluid to or from the fluid chamber wherein the volume changes upon receiving engine vibrations;

means for stopping the movement of said movable plate; and

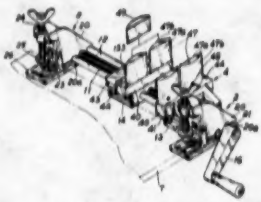
control means for moving said stopping means so as to change the movable distance of said movable plate in accordance with a driving condition of the engine.

4,583,724

MULTIPLE-PURPOSE VICE FOR WOOD WORKING

Charles Huang, P.O. Box 10160, Taipei, Taiwan

Filed Jun. 25, 1985, Ser. No. 748,674
Int. Cl.[4] B23Q *1/04*
U.S. Cl. 269—88 **3 Claims**



1. A multiple-purpose vice for wood working comprising: a guide means including a lead screw having a male-threaded portion and a shaft portion, two guide bars parallel to said lead screw, a fixing jaw base having two engaging extensions thereon and slidingly inserted with said two guide bars and said shaft portion of said lead screw, a sliding jaw base having two engaging extensions thereon corresponding to the two engaging extensions of said fixing jaw base and slidingly inserted with said two guide bars and the male-threaded portion of said lead screw, and a fast-moving span adjuster engaged within a rectangular hole formed under said sliding jaw base and movably engaged with said lead screw as driven by a handle terminated on said lead screw;

a pair of bench clamps including two clamping chucks having three holes in a clamping mouth between the two chucks to resiliently clamp said two guide bars and rotatably insert said lead screw as acted by a torsional spring fixed therein, a wing bolt and a clamping plate adapted to fasten said bench clamp on a bench;

two center-rest clamping jaws including an upper frame portion having a flat surface adapted to clamp the flat-surface work piece, a tail spindle rotatably fixed on said upper frame portion to fasten the work piece especially for the piece to be aligned with the center line of said spindle, two engaging grooves formed on its bottom engageable with said two engaging extensions formed on either sliding jaw base or fixing jaw base and a side extension edge adapted to stably fix said jaw on either said base; two universal clamping jaws including a holder having two engaging grooves on its bottom engageable with said two engaging extensions on said base and having a side extension adapted to stably mount said jaw on said base, two clamping cylindrical columns fixed on said holder and two semi-circle universal clamping blocks rotatably mounted on said two columns to allow each block rotated around the axis of said column adapted to clamp irregular work piece; and

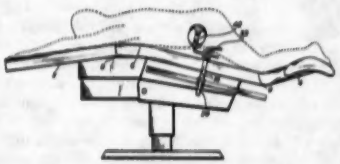
an outside-span clamping base having two engaging extensions on its upper surface engageable with the two engaging grooves formed on the bottom of said jaw and having two wing bolts each formed with a clamping disc adapted to clamp said base on a bench with a clamping plate extending from said upper surface, whereby a larger work piece can be clamped between a jaw mounted on said outside-span base and another jaw mounted on a sliding jaw base beyond said bench clamp.

4,583,725

PATIENT SUPPORT FRAME FOR POSTERIOR LUMBAR LAMINECTOMY

Roger D. Arnold, 4259 Macon Rd., Memphis, Tenn. 38122.

Filed Mar. 5, 1985, Ser. No. 708,403
Int. Cl.[4] A61G *13/00*
U.S. Cl. 269—328 **2 Claims**



1. An attachment for a surgical table comprising:

first and second adjustable table brackets having first and second table clamps thereon respectively for attachment to an operating table;

a slidebar support attached to said adjustable table brackets;

first and second perpendicular slidebar members attach to said sidebar support;

first and second two-way adjustable support clamps attach to said first and second perpendicular slidebars;

first and second patient support brackets engaged in said two-way adjustable support clamps respectively;

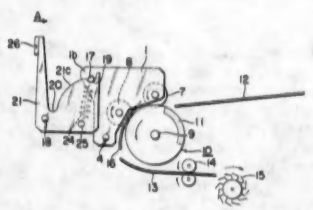
iliac crest supports mounted at the ends of said patient support brackets.

4,583,726

APPARATUS FOR COUNTING THE NUMBER OF PAPER SHEETS

Hiroyoshi Nogi, and Hiroyuki Ookawa, both of Tokyo, Japan, assignors to Musashi Engineering Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1983, Ser. No. 562,699
Claims priority, application Japan, Dec. 28, 1982, 57-195910
Int. Cl.[4] B65H *3/06, 5/06*
U.S. Cl. 271—4 **4 Claims**



1. Sheet transfer apparatus for sheet counting apparatus, said transfer apparatus comprising a hopper for receiving stacked sheets, a payout roll adjacent said hopper for feeding sheets out of said hopper, a stacker for receiving the sheets fed out of said hopper and disposed downstream of said payout roll, and guide means adjacent the periphery of said payout roll for guiding said sheets as they are fed by said payout roll from said hopper to said stacker and pass between said payout roll and said guide means, wherein the improvement comprises a movable support for said guide means for moving said guide means into a first position close to the periphery of said payout roll and, alternatively, into a second position farther away from the periphery of said payout roll, said movable support comprising a frame

member with a pair of end flanges, said frame member being pivotably mounted at said flanges for movement toward and away from said payout roll, and said guide means comprising a plate mounted on said frame member and extending both axially and circumferentially of said payout roll, and a control means slidably engaging said support and mounted for movement relative to said support and from a first position to a second position, said control means in said first position thereof holding said guide means in said first position thereof for guiding said sheets as they pass between said payout roll and said guide means and, with movement of said control means to said second position thereof, said control means moves said support away from said periphery of said payout roll and hence, moves said guide means into said second position of said guide means, said control means comprising a lever pivotally mounted for movement toward and away from said frame member and having portions spaced from its pivot axis engageable with said frame member, one of said portions being engageable with said frame member in said first position of said control means and another of said portions being engageable with said frame member in said second position of said control means.

4,583,727

DEVICE FOR PICKING UP, TRANSFERRING AND TURNING A TEXTILE WEB

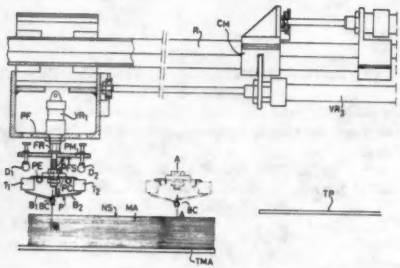
Jacques Fort, Darnieulles, France, assignor to "Les Applications Industrielles Vosgiennes" en abrégé "S.A.P.I.V.O.G.", Darnieulles, France

Filed Jun. 12, 1984, Ser. No. 619,928

Claims priority, application France, Jun. 24, 1983, 83 10438

Int. Cl.[4] B65H *3/30*

U.S. Cl. 271—19 **6 Claims**



1. A transfer device for feeding sheets to a treatment station of a textile machine, comprising:

an unpiling means provided with a single gripper head, adapted to pick up elements in the form of a textile sheet from the top of a pile of such elements;

said unpiling means being supported for movement in a generally linear path;

a means for actuating said gripper head to pick up a single sheet,

a means for moving said unpiling means in a reciprocatory movement along a generally linear path;

said unpiling means having a first station, a second station, and an unloading platform;

actuation of said gripping head at said first station causing gripping of a sheet, such that movement of said unpiling means to said unloading platform causes overturning of the sheet;

actuation of said gripping head at said second station causing gripping of a sheet, such that movement of said unpiling means to said unloading platform does not cause overturning of the sheet; and

a means for selectively positioning said piling means at said first station or said second station; whereby said first and said second stations and said means for selectively positioning said unpiling means selectively causes turning or not of the topmost sheet of the pile.

4,583,728

AUXILIARY GRIPPER DRIVE

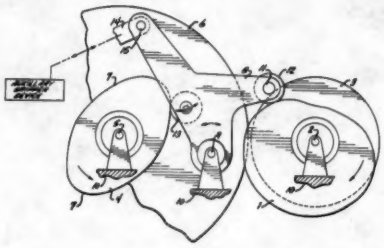
Josef Mathes, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1984, Ser. No. 646,694

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 3333050

Int. Cl.[4] B65H *5/10*; F16H *25/16*

U.S. Cl. 271—268 **8 Claims**



1. An auxiliary gripper drive for sheet-fed printing machines and the like having a machine frame and a control cam fixed on a shaft for generating the auxuiliary gripper movement by way of a control lever which is pivotable on the machine frame and which bears against the control cam via a first cam follower, and having an auxiliary cam against which a second cam follower, disposed on the control lever, bears and a suspension operative between the cam followers so that the cam followers are respectively held in continuous contact with their associated cams, characterized in that the control cam and the auxiliary cam are disposed on two parallel shafts rotating in a fixed ratio to one another and said suspension includes a torsion spring which at one end is secured to the control lever and at the other end is connected to a bearing element disposed rotatably in the control lever and journaling the second cam follower on an eccentric.

4,583,729

VACUUM CONTROL DEVICE

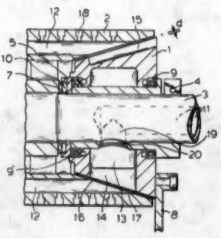
Martin Blumle, Gullesheim, Fed. Rep. of Germany, assignor to Winkler+Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co., Neuwied, Fed. Rep. of Germany

Filed Nov. 9, 1983, Ser. No. 550,490

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1982, 3241869

Int. Cl.[4] B65H *3/08*

U.S. Cl. 271—276 **2 Claims**



1. A device for controlling the vacuum at a revolving vac-

uum cylinder fixedly mounted to a rotating shaft, said device including:

a control head fixed to be fee of rotation having the shape of a truncated cone and defining a control surface on the conical surface thereof, said control head being coaxially and rotatably mounted on said shaft;

vacuum canals, cover sections and canals for atmospheric pressure arranged on the conically shaped control surface of said control head;

a conically shaped control surface formed internally in said vacuum cylinder corresponding to the shape of the conical control surface of said control head, said vacuum cylinder control surface including the control slots of the vacuum bores of said vacuum cylinder, said control head being telescoped into the internal conical shape of said vacuum cylinder defining a vacuum gap between the control surfaces thereof;

means for rotatably adjusting said control head so as to adjust the timing of vacuum delivery to said vacuum cylinder; and

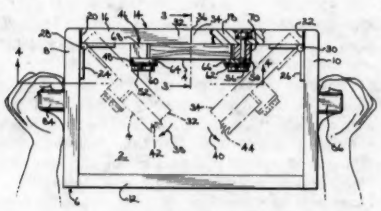
means for adjusting the vacuum gap between the control surfaces of the control head and the vacuum cylinder by adjusting the relative axial positions between said control head and said vacuum cylinder.

4,583,730

MARTIAL ARTS PRACTICE DEVICE WITH BREAKAGE

Brent A. Gecht, 8626 W. Fiebrantz Ave., Milwaukee, Wis. 53222, and Thomas M. Riley, 12567 Woodberry Dr., Mequon, Wis. 53092

Filed Feb. 27, 1985, Ser. No. 705,979
Int. Cl.[4] A63B *69/00*
U.S. Cl. 272—76 **13 Claims**



9. A martial arts practice device with reusable impact breakaway means providing actual breakage of throw-away slats comprising:

a frame;

re-usable impact breakaway means supported on said frame and movable between first and second positions;

means for mounting a throw-away slat in a given position when said breakaway means is in said first position such that said slat breaks when said breakaway means is moved to said second position by impact of the martial arts practitioner.

4,583,731

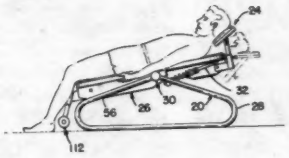
SPINAL EXERCISING APPARATUS

James P. Crivello, 17301 NE. 131st, and Barry A. Spencer, Redmond, Wash. 98052, assignor to James P. Crivello, Redmond, Wash.

Filed Jan. 4, 1984, Ser. No. 568,253
Int. Cl.[4] A61G *7/00, 7/06;* A63B *21/02, 21/04*
U.S. Cl. 272—144 **5 Claims**

1. Spinal exercising apparatus centering on a person, while on a table, applying forces via contact of his or her head, on a head pad assembly having a uniformly resistive force means, when the head pad is initially located above the end of the table, and as the person continues to apply his or her force, the head pad assembly is rotated downwardly below the end of the table, while continuously applying a uniformly resistive force, comprising:

(a) a table of a width and length to support a person from his or her knees to his or her neck, having a supporting frame to position the table above floor level, the table being substantially planar and having first and second ends; and



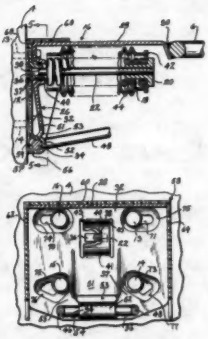
(b) a head pad assembly having a uniformly resistive force means, pivotally secured to the underside of the first end of the table, to initially position the head pad above the table for receiving a person's head, to rotate downwardly below the first end of the table when a person continuously applies forces against uniformly resistive force means.

4,583,732

BREAKAWAY BASKETBALL GOAL

David A. Allen, New Berlin, Wis., assignor to Huffy Corporation, Miamisburg, Ohio

Filed Mar. 7, 1985, Ser. No. 709,048
Int. Cl.[4] A63B *63/08*
U.S. Cl. 273—1.5 R **6 Claims**



1. A slam dunk breakaway basketball goal assembly for mounting to a backboard comprising:

a basketball goal rim;

mounting plate means for mounting to said backboard;

means pivotally mounting said rim to said mounting plate means, said rim having a first horizontal position and a second downwardly pivoted position responsive to a slam dunk or the like;

means biasing said rim to said horizontal position and yielding in response to a given threshold downward force on said rim to permit pivoting of said rim to said downward position,

wherein:

said pivotal mounting means comprises second mounting plate means rigidly mounted to said rim and pivotally mounted to said first mounting plate means;

wherein said biasing means is operatively coupled to said first and second mounting plate means to bias them in a given direction relative to each other;

wherein said second mounting plate means pivots away from said first mounting plate means at a pivot point below the horizontal plane of said rim;

wherein said biasing means comprises spring means extending generally horizontally below said plane of said rim and above said pivot point;

wherein:

said first mounting plate means comprises a generally vertical plate for mounting to said backboard;

said second mounting plate means comprises a generally inverted L-shaped member having a generally vertical leg extending along said vertical plate in said first position and having a generally horizontal leg extending away from said vertical plate and having said rim mounted at the outer end of said horizontal leg;

said biasing means comprises a generally horizontal stud having one end retained by said vertical plate and encircled by a compression spring bearing between said vertical leg and a retainer on the other end of said stud, such that pivoting of said vertical leg away from said vertical plate at said pivot point below said spring compresses said spring when the downward force on said rim is greater than said given threshold;

wherein said rim has a pair of supports extending downwardly from opposite undersides thereof and joined at a central portion forming said pivot point adjacent said backboard, said vertical plate including means engaging and pivotally mounting said central portion of said supports, said vertical leg being rigidly secured to said central portion of said supports;

said last mentioned means of said vertical plate is curled around said central portion of said supports and coined to provide a snug fit substantially eliminating vertical and horizontal free play at said pivot point.

4. A slam dunk breakaway basketball goal assembly for mounting a backboard comprising:

a basketball goal rim;

first mounting plate means comprising a generally vertical plate for mounting to said backboard;

a set of four apertures through said vertical plate spaced to form a rectangle, the first and second apertures having an extended slot configuration, the third and fourth apertures having a triangular configuration each with extension along at least one side of the triangle oblique to the extension of a respective one of said first and second extended slot apertures, said first aperture being diagonally opposite said third aperture in said rectangle, said second aperture being diagonally opposite said fourth aperture in said rectangle;

second mounting plate means comprising a generally inverted L-shaped member rigidly mounted to said rim and pivotally mounted to said first mounting plate means to pivot from a first horizontal rim position to a second downwardly pivoted position at a pivot point below the horizontal plane of said rim; and

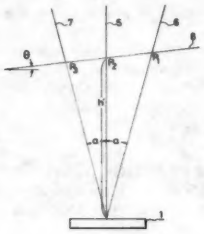
biasing means coupled between said first and second mounting plate means and biasing said rim to said horizontal position and yielding in response to a given threshold downward force on said rim to permit said pivoting of said rim to said downward position.

4,583,733

BASEBALL BAT SWING MEASURING DEVICE

Sho Ito; Tomoyuki Nakaguchi; Kumio Kasahara; Toshio Takei; Tsutomu Hashimoto, and Shojiro Nakahara, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 509,503, Jun. 30, 1983, abandoned.
This application Aug. 12, 1985, Ser. No. 764,523
Claims priority, application Japan, Jun. 30, 1982, 57-113549
Int. Cl.[4] A63B 71/02
U.S. Cl. 273—26 R 15 Claims



1. A baseball bat swing measuring device, comprising:

a base sensor unit having first, second and third holes formed at a predetermined interval in a direction perpendicular to a swing direction of a baseball bat;

beam emitting means disposed in said base sensor unit for emitting a first beam vertically upwardly of said base sensor unit through said first hole of said base sensor unit, emitting a second beam upwardly rearwardly through said second hole of said base sensor unit so as to be inclined at a predetermined angle with respect to said first beam, and emitting a third beam upwardly forwardly through said third hole of said base sensor unit to be inclined at substantially the same angle as that of said second beam;

first beam receiving means disposed in said base sensor unit for receiving through said first hole of said base sensor unit the first beam reflected from said baseball bat when said baseball bat passes across the first beam and for in turn outputting a signal in compliance with the reflection pattern of said first beam, said first beam receiving means including first and second concentrical beam receiving regions; and

second and third beam receiving means disposed in said base sensor unit for receiving through said second and third holes of said base sensor unit the second and third beams reflected from said baseball bat when said baseball bat passes across the second and third beams and for in turn outputting signals therefor, respectively;

wherein in accordance with the output signal of said first receiving means, a swing height of said baseball bat from said base sensor unit is measured on the basis of the reflection pattern caused when the baseball bat passes across the first beam, and in accordance with the output signals of the first, second and third beam receiving means, an angle of the swing surface and a swing speed of said baseball bat are measured by differences between timings when the baseball bat passes across the first, second and third beams.

4,583,734

RACKET HAVING A UNIQUE HANDLE STRUCTURE

Ulrich Pawlicki, Im Schellental 8, and Wolfgang Schüler, An der Kopfbuche 20, both of D-5024 Pulheim, Fed. Rep. of Germany

Division of Ser. No. 594,535, Mar. 29, 1984, Pat. No. 4,565,371.
This application Apr. 10, 1985, Ser. No. 721,801
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1983, 3312834
Int. Cl.[4] A63B *49/08*
U.S. Cl. 273—73 J 2 Claims

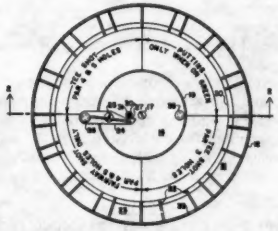
1. A game racket comprising a head portion, a handle shaft portion and a handle grip portion, said handle shaft portion connecting said head portion to said handle grip portion, said head portion defining an area which has strung thereacross a plurality of strings forming a bilateral striking area, part of said handle shaft portion being curved in a direction perpendicular to the plane of said striking area, said curved part of said handle shaft portion being bridged by a traction element, and wherein said traction element is a filamentary structure.

4,583,735

GOLF GAME APPARATUS

Donald L. Knight, 1720 Ala Moana, Apt. H204, Honolulu, Hi. 96815

Filed Feb. 28, 1985, Ser. No. 706,938
Int. Cl.[4] A63F *7/06*
U.S. Cl. 273—87.4 6 Claims



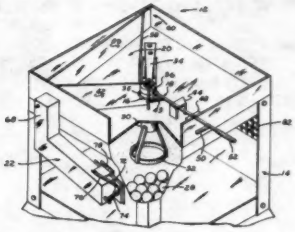
1. A golf game apparatus comprising in combination:
(a) selection means comprising:
1. an enclosure comprised of a floor and circular sidewall rising upwardly from said floor,
2. a circular inner disc positioned upon said floor and rotatively mounted thereto by pivot means centered with respect to said inner disc and sidewall,
3. a stationary outer panel surrounding said inner disc and substantially coplanar therewith, said outer panel being defined by concentric inner and outer circular peripheries, the inner periphery of said outer panel being in close-fitting adjacency to the outer perimeter of said inner disc,
4. a series of depressed compartments positioned between the outer periphery of said outer panel and said sidewall, each compartment having associated therewith printed indicia representing game instructions,
5. striking means pivotably mounted to said inner disc.
6. a ball having a size adapted to be propelled by said striking means into said compartments, and
7. a depression in said inner disc adapted to position said ball before said striking means,
(b) a series of playing boards, each having indicia representing the features of outdoor golf courses,
(c) score cards associated with each playing board, and
(d) position markers for use by the players upon a playing board to denote status of the game.

4,583,736

NUMBER-COMBINATION SELECTOR

Anthony J. Lorraine, 303 College St., Chicopee, Mass. 01020

Filed Sep. 5, 1985, Ser. No. 772,864
Int. Cl.[4] A63F *9/00*
U.S. Cl. 273—144 B 12 Claims



5. An apparatus comprising:
a. transparent box-like enclosure in which a plurality of lightweight balls are stored, said enclosure having a top, bottom and four sides;
b. an electrically operated fan connected in fluid communication with an opening in the bottom of the enclosure, whereby air from the fan blows the balls about randomly within the enclosure;
c. an open-ended vertical tube that extends upwardly from the interior of the enclosure through its top, wherein a bottom end portion of the tube includes a frusto-conical guide for guiding balls into and through the tube;
d. a trap mechanism that is affixed to the top of the enclosure to control a ball as it leaves a top portion of the tube, wherein the trap mechanism comprises an inverted L-shaped finger with the horizontal portion of the "L" being spaced apart from and overlying the open top end of the tube that extends through the enclosure's top;
e. a spring-biased, pivotable, elongated selector arm having an integral end portion that is designed in size and shape to normally straddle and block the tube's open top end to prevent balls from rising through the tube, whereby said arm can be manually pivoted to uncover the tube's upper end and allow a ball to pop up the tube and then can be released to spring back and kick the ball away from the overlying finger trap mechanism during the arm's return movement;
f. an inclined ramp that is adjacent the tube's upper end, which receives the kicked ball to feed it downwardly; and
g. a clear display chute that catches the balls from the ramp and allows them to be viewed by a user, wherein the chute includes a hinged gate that normally blocks an opening between the chute and the enclosure, and the gate has a spring-biased lever that can be pivoted to swing open the gate and thus unblock the opening to permit a displayed ball in the chute to re-enter the enclosure.

11. A method of randomly selecting numbers in a game of chance, said method comprising:
a. blowing a plurality of lightweight, numbered balls within the enclosed storage chamber of a bingo-ball blower;
b. blocking the upper open end of a vertical discharge tube of the blower with an overlying, spring-biased selector arm to prevent the balls from rising up the tube;
c. pivoting and holding the selector arm away from the tube to unblock the tube's open upper end and allow a ball to pop up the tube;

d. releasing the arm to allow it to spring back to its position described in step b so that it kicks a ball away from the tube's upper end and onto an adjacent ramp; and

e. feeding the ball downwardly, via gravity, from the ramp into a display chute that catches the ball and allows it to be viewed by a user.

4,583,737

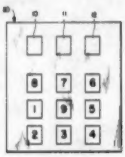
FORTUNE TELLING GAME AND DECK OF CARDS

Mary L. Falcone, 155 W. 68th St., New York, N.Y. 10023, and Nicholas T. Zann, 210 E. 29th St., New York, N.Y. 10016

Filed Jun. 4, 1984, Ser. No. 616,973

Int. Cl.[4] A63F *1/04, 9/18*

U.S. Cl. 273—161 31 Claims



1. A fortune telling game comprising: a deck of fortune telling cards comprising:

a plurality of cards, each of said cards having a top and bottom end and a single indicia bearing face, the indicia of said indicia bearing face being oriented in a common direction from said top end to said bottom end, said indicia of each card comprising at least one word, symbol or combination thereof which bears a first suggestive relationship to a query when the card is oriented with the top end above the bottom end, and an opposite suggestive relationship to said query when said card is oriented with the top end below the bottom end;

said plurality of cards comprising a first group of cards, each bearing indicia suggestive of a composite of at least one of a physical and personality characteristic of a person; and

said plurality of cards further comprising a second group of cards, each bearing indicia suggestive of a relationship to the query or a relationship to the indicia of each of said first group of cards or both; and

a game board comprising card receiving stations for receiving said cards on said game board, said card receiving stations consisting of:

a first card receiving station consisting of three card receiving spaces arranged in a row; and a second card receiving station consisting of nine card receiving spaces arranged in three parallel rows which are parallel with said row of said first card receiving station, each of said parallel rows of said second card receiving station consisting of three adjacent card receiving spaces.

4,583,738

GOLF SWING TRAINING APPARATUS AND METHOD

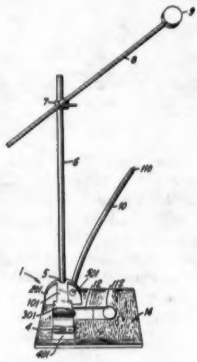
Augusto Fava, Via Ferrarese 2, 44042 Cento (Ferrara), Italy

Filed May 10, 1984, Ser. No. 608,803

Claims priority, application Italy, May 13, 1983, 12517 A/83; May 23, 1983, 15184/83[U]

Int. Cl.[4] A63B *69/36*

U.S. Cl. 273—186 C 28 Claims



7. An apparatus for golf swing training comprising:

(i) a base including an anvil having a vertically oriented planar surface for contact with a golf club head during golf swing play and a plurality of mounting means located thereon, said planar surface of said anvil causing a golfer's wrists to straighten upon said contact between said planar surface and said golf club head;

(ii) means for guiding a golf club in at least one of a plurality of predetermined swing paths, said paths including one leading to said planar surface, said guiding means being connected to a first of said plurality of mounting means; and

(iii) positioning means pivotably attached to a support member mounted in a second of said plurality of mounting means, said positioning means being adjustable along said support member for positioning a golfer with respect to said at least one swing path defined by said guiding means.

4,583,739

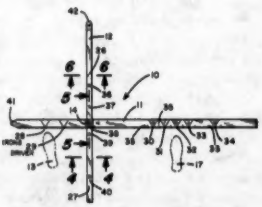
GOLFER'S STANCE POSITIONING DEVICE

Reda Kabbany, 1143 Thorn St., St. Paul, Minn. 55106

Filed Oct. 19, 1983, Ser. No. 463,820

Int. Cl.[4] A63B *69/36*

U.S. Cl. 273—187 R 9 Claims



1. A golf aid comprising:

a first elongated member comprising a single elongated element adapted for placement onto the golfing surface so that said first elongated member is generally parallel to the intended flight of the ball;

a second elongated member comprising a single elongated element adapted for placement onto the golfing surface so that said second elongated member is generally perpendicular to the intended flight of the ball;

slide and pivot means including an opening in its top surface and slidably connected with said second elongated member and pivotably secured to said first elongated member between its ends at a fixed point for facilitating the pivotal movement of said second elongated member relative to said first elongated member about said fixed point member between an operative position in which said first and second elongated members are disposed at right angles with respect to one another and a collapsed position in which said first and second elongated members are generally colinear, said slide and pivot means further facilitating the sliding movement of said second elongated member relative to said slide and pivot means and said first elongated member along the longitudinal axis of said second elongated member;

a first set of indicia on said first elongated member defining the proper position for the feet of the user of the golf aid for a particular golf club, said first set of indicia including left foot indicia located on one side of said fixed point and right foot indicia located on the other side of said fixed point, said left foot and right foot indicia including an identification of the various golf clubs and indicating the proper position for such left and right feet, respectively, for a particular golf club; and

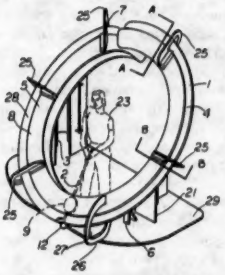
a second set of indicia on said second elongated member defining the proper position for placing the golf ball for a particular golf club, said second set of indicia including an identification of the various golf clubs and being viewable through the opening in the said slide and pivot means to provide means for aligning said second elongated member relative said first elongated member so that proper ball placement can be achieved for a particular club.

4,583,740

GOLF SWING MUSCLE TRAINING DEVICE

Richard L. Ohly, Orlando, Fla., assignor to Swing Plane Systems, Inc., Orlando, Fla.

Filed Dec. 19, 1983, Ser. No. 563,233
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—191 A **3 Claims**



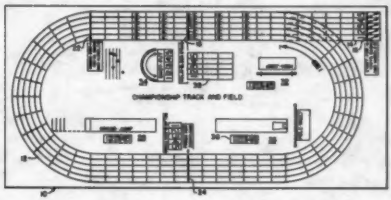
3. A weighted golf club for exercising and building muscles necessary for strong and effective golf swing, comprising a golf club containing a collar affixed to said club, just above the hitting portion of the club, a small coiled spring fitting around the shaft of the club, just above the hitting portion of the club, a small coiled spring fitting around the shaft of the club, just above said collar, a circular weight containing a hole through the diameter of said weight for insertion of the club through same, a coiled spring on the top of the weight mounted on the shaft of the golf club, with a collar affixed to the golf club shaft to retain said spring and weight during the golf swing.

4,583,741

CHAMPIONSHIP TRACK AND FIELD GAME

Andrew Brisciano, 25 Sunset La., Miller Place, N.Y. 11764

Filed Nov. 15, 1984, Ser. No. 671,620
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—244 **5 Claims**



1. A game of championship track and field events for simulated competition among a plurality of teams, each team representing a player comprising:

a playing board having a generally oval track with straight sides along its long side wherein are marked lanes for a plurality of runners, one full lap in said track representing the distance of 440 yards, having a single starting and finish line for all distances which are a multiple of the distance around said track including a relay race, separate starting and finish lines for the 100 yard dash and a hurdles race, with hurdles indicated in said lane, and a separate finish line for a 220 yard run, said playing board being provided with a block stand adjacent said oval track containing spaces designated for each relay team;

separated designated areas on said playing board surrounded by said track, said areas consisting of a pole vaulting area, a broad jump area, a high jump area, and a shop put area, each separate area being provided with a block stand containing spaces designated for each team;

a plurality of board pieces comprising a separate group of pieces designated for each team consisting of at least four board pieces, each team color differentiated from each other team and furthermore each piece of each team further differentiated from each other to designate a particular event;

a pair of dice to be thrown by each player to establish the order of play and for moving the board pieces in each event; and

separate board means containing a winners circle adapted to accumulate and accomodate the winning board pieces from each event, said separate board means being capable of accommodating at least said at least four board pieces, the winning team being the team having the most board pieces accumulated in said winners circle on said separate board means after the play of all events is completed.

4,583,742

BLOCK AND BOARD PUZZLE GAME

Barry Slinn, 49 Fourier Drive SE., Calgary, Alberta, Canada (T2A 2C2)

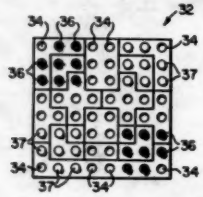
Filed Jun. 25, 1984, Ser. No. 624,356
Int. Cl.[4] A63F *3/02, 9/08, 9/12*
U.S. Cl. 273—260 **1 Claim**

1. A puzzle game comprising:

(a) a game board with a rectangular playing surface; and

(b) a plurality of blocks defined by one or more similar cubes, at least one of the blocks being a single cube and the majority of the blocks including two or more cubes defining L-shaped, cruciform and straight blocks, the blocks being capable of defining a rectangle occupying the entire playing surface, the blocks also being capable of defining other geometric figures including a cube, a T-shaped wall

and stairs, at least one recess in a top surface of each said block, the number of recesses in each block being equal in



number to the number of cubes defining the block, and peg means removably insertable in said recesses.

4,583,743

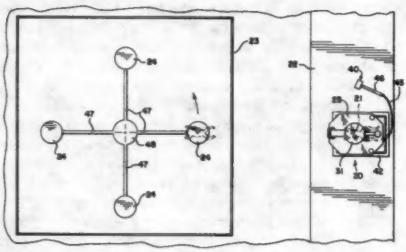
PROJECTILE CATAPULT AND AMUSEMENT DEVICE

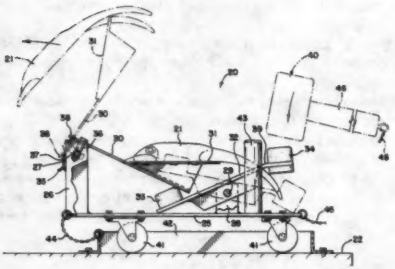
George L. Macek, 10519 Brosius Rd., Garrettsville, Ohio 44231

Filed May 17, 1985, Ser. No. 735,097

Int. Cl.[4] A63F *9/02*; F41J *9/02*; F41B *3/02*

U.S. Cl. 273—368 **2 Claims**





1. An amusement device including a projectile catapult, a table and a series of adjacent targets:

said projectile catapult having a base, forward and rearward stanchions connected to said base and mounting front and rear pivot pins, said front pivot pin being at a height above said rear pivot pin, an elongate power arm mounted on said front pivot pin and projecting toward said rearward stanchion, a projectile platform carried on and above said power arm, an elongate rocker arm mounted on said rear pivot pin and having a forward portion projecting beneath said power arm and a rearward portion projecting behind said rearward stanchion, a forward resilient force transmission means between said power arm and said rocker arm, and, a rearward resilient force transmission means on said rocker arm behind said rear stanchion;

said catapult base further having a set of swivel wheels for rolling on said table and confined on said table, with a limited range of movement, by a rail frame connected to said table;

said catapult base being moved by the user on said swivel wheels for aiming said projectile platform at a selected target by a pair of grip handles projecting above the rearward end of said base.

4,583,744

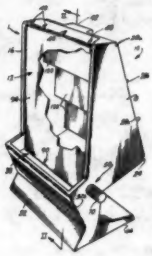
PROJECTILE CAPTURING DEVICE AND TARGET

Wilbur E. Tolliver, Holland, and Larry R. Magnuson, Muskegon, both of Mich., assignors to Tolcon Steel Corporation, Grand Rapids, Mich.

Filed Mar. 27, 1984, Ser. No. 594,021

Int. Cl.[4] F41J *1/10, 1/14, 1/16*

U.S. Cl. 273—404 **26 Claims**



8. A projectile capturing device comprising:

a housing having an upper surface defining a target mounting zone thereunder, and said housing having a rear support surface;

a plurality of flexible, impact resistant interceptor elements mounted on said rear support surface to be generally spaced therefrom, each said interceptor element depending freely from said rear support surface behind said target mounting zone and having an unsecured lower end, said flexible interceptor elements being adjacently, vertically arrayed in an overlapping relationship so that said interceptor elements form a backdrop behind substantially the entirety of said target mounting zone, whereby when a projectile passes through a target face mounted on said housing and strikes one of said interceptor elements, said interceptor element flexes and moves freely to deflect the projectile downward without substantially deforming the projectile or piercing said interceptor element;

a forwardly, downwardly sloping collecting surface located in said housing under said interceptor elements;

a projectile collecting trough connected to said housing forward of said target mounting zone to be communicative with said collecting surface, said collecting trough having a generally upstanding forward stopwall and a collecting trough opening to the exterior of said housing forward of said target mounting zone, whereby when a projectile is deflected downward by said interceptor element said projectile rolls down said collecting surface and is deposited into said collecting trough forward of said target mounting zone;

a roller mounting assembly on said housing disposed at a first side of target mounting zone and accessible from the exterior of said housing, said roller mounting assembly including means for mounting a roll of target faces on said housing and means for selectively preventing said roll of target faces from unrolling;

a plurality of target mounting hooks located at an opposite second side of target mounting zone from said first side on

the exterior of said housing, whereby a target roll is mountable on said roller assembly and a new target face therefrom is secured in said target mounting zone by grasping the end of said roll from the exterior of said housing and by unrolling said new target face from said roll and hooking on said hooks, providing a previously used target face with the ability to be torn from said roll adjacent said hooks from the exterior of said housing

said forward stopwall upstanding in front of said roller mounting assembly to define betweeen said upper surface and said forward stopwall a generally vertical projectile entrance zone that is smaller than said target mounting zone, said collecting trough opening communicating with said target mounting zone to provide therethrough an unobstructed access opening to said roller mounting assembly disposed beneath said projectile entrance zone, whereby said forward stopwall protects said roller mounting assembly, and said roller mounting assembly is accessible through said target mounting zone and said collecting trough opening to change a target face roll mounted thereon.

4,583,745

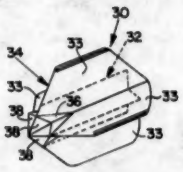
DART FLIGHT

Emory G. Ladner, 15 Woodward Ave., Quincy, Mass. 02169

Filed Apr. 15, 1985, Ser. No. 723,134

Int. Cl.⁴ A63B *65/02*

U.S. Cl. 273—423 **7 Claims**



7. A dart flight for use with a dart of the type having a shaft with a distal end having at least two rearwardly extending prongs which between them form a slot for releasably receiving a flight, said dart flight comprising a spine section having a portion defining a forward end thereof shaped to slidably fit into said slot formed between said prongs for attaching said dart flight to said shaft and a wing section having a plurality of wings extending outwardly from said spine section and including surfaces between adjacent wings thereof and said spine section for providing pockets therebetween for fitting over said prongs of said shaft to protect them form subsequently thrown darts by presenting to their points a smooth, gradually tapered surface which shrouds said prongs of said shaft distal end and is effective to deflect darts contacting it with a minimum deviation from their original course.

4,583,746

METHOD AND APPARATUS FOR SEALING BETWEEN TWO CONCENTRIC MEMBERS

John E. Lawson, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Continuation of Ser. No. 584,886, Feb. 28, 1985, abandoned, which is a continuation of Ser. No. 446,994, Dec. 6, 1982, abandoned. This application Oct. 26, 1984, Ser. No. 665,659

Claims priority, application United Kingdom, Dec. 8, 1981, 8136936; Sep. 24, 1982, 8227363

Int. Cl.⁴ F16L *33/16*

U.S. Cl. 277—1 **15 Claims**

1. The method for providing a fluid-tight seal across the annulus between two concentric rigid members in order to seal the annulus against large fluid pressures, comprising

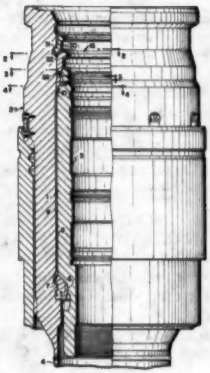
providing concentrically opposed surface portions on the rigid members,

at least one of said surface portions being generally frustoconical and tapering longitudinally of the rigid members, whereby said surface portions define therebetween an elongated annular space which tapers from a first larger radial width to a second smaller radial width;

preliminarily inserting into said annular space a metal sealing ring which has a radical thickness which decreases axially of the ring,

the direction of preliminary insertion being such that the end portion of the ring which is of smaller radial thickness enters the portion of said annular space which is of larger radial width and proceeds toward the portion of said annular space of smaller radial width,

said concentrically opposed surface portions each including an elongated sealing surface which extends from the end of said annular space which is of smaller radial width toward the opposite end of said annular space, the length of said sealing surfaces being equal to a substantial portion of the axial length of the ring,



the relative radial widths of the ring and said elongated annular space being such that, as the ring is preliminarily inserted, the ring is stopped by engagement with at least one of said concentrically opposed surface portions when the leading end of the ring is still a substantially distance from the end of said elongated annular space which is of smaller radial width,

at least the leading portion of the sealing ring being of a metal capable of significant plastic deformation; and

while restraining the two rigid members against axial displacement, applying to the end of the ring which is of larger radial thickness a large force directed axially of the ring toward the end of smaller radial thickness and uniformly distributed over the annular extent of the ring and thereby forcing the metal of at least the leading portion of the ring into the condition of plastic flow, with the ring then moving further into said annular space under the action of said large force until a substantial portion of the length of the ring is in fluid-tight sealing engagement with both of said sealing surfaces.

4,583,747

BEARING SEAL FOR A CENTRIFUGE

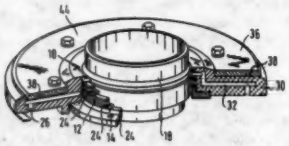
Erhard Aufderhaar, Unterschleissheim; Ernst Gruebl, Munich, and Siegfried Pfaff, Germering, all of Fed. Rep. of Germany, assignors to Krauss-Maffei A.G., Fed. Rep. of Germany

Filed Dec. 5, 1984, Ser. No. 678,417

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1983, 3343938

Int. Cl.[4] F16J 15/447, 15/40

U.S. Cl. 277—3 10 Claims



1. A bearing seal assembly between an internal space and a drive section of a centrifuge, comprising:

a drive shaft;

a protective bushing for the drive shaft;

a plurality of annular sealing elements collectively and elastically surrounding the protective bushing and arranged in axial succession from a first part of the protective bushing closest to the internal space of the centrifuge to a second part of the bushing which is closest to the drive section of the centrifuge;

a section of the protective bushing having a reduced diameter and surrounded by the sealing element closest to the internal space of the centrifuge; and

means for passing protective gas through said sealing element closest to the internal space of the centrifuge.

4,583,748

FACE SEAL FOR SHAFTS OF MACHINES PROCESSING SYNTHETIC RESIN

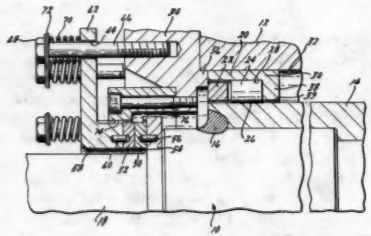
Erich Weichenrieder, Sr., Egling-Neukolbing, Fed. Rep. of Germany, assignor to Recycloplast AG, Egling-Neukolbing, Fed. Rep. of Germany

Filed Jul. 24, 1984, Ser. No. 634,083

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 3327131

Int. Cl.[4] F16J 15/34

U.S. Cl. 277—81 R 1 Claim



1. A shaft seal for a shaft running through the wall of a housing of a chamber for the processing of plasticized resin under pressure within a resin processing machine, said shaft having an enlarged first portion housed in said chamber and a second portion extending from said chamber, said second portion positioned outside of said chamber, comprising a first heat and wear resistant sealing ring, said first sealing ring having a running face placed around said second portion of said shaft and extending outward therefrom, a second heat and wear resistant sealing ring, said second sealing ring mounted on said shaft around said second portion of said shaft, said second sealing ring positioned between said first sealing ring and said first portion of said shaft, said second sealing ring having a running face which is acted upon by the running face of said first ring, a centering ring supported on said housing and secured to said second sealing ring for radially supporting said second sealing ring,

a ring-like backup body having a radially extending flange secured to said first sealing ring for radially suporting said first sealing ring,

a plurality of pins circumferentially spaced around said radial flange, each pin having a stop and a spring element, said spring elements being coaxially positioned around said pins, said pins being passed through said flange and fixed to said housing such that said stops are spaced a predetermined distance from said flange and said spring elements are biased between said stops and said flange, said spring elements loading said sealing rings and urging said sealing rings towards said chamber and along said shaft, and a radial clearance between said rings and said second portion of said shaft for enabling said shaft to expand in response to increases in temperature in said resin processing machine.

4,583,749

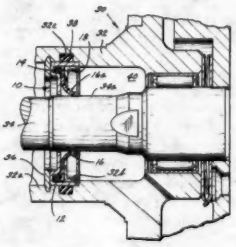
SEAL ASSEMBLY FOR A VEHICLE AIR CONDITIONING COMPRESSOR

Frederick R. Hatch, Ann Arbor, Mich., assignor to The Mather Company, Sylvania, Ohio

Continuation of Ser. No. 502,556, Jun. 9, 1983, abandoned. This application Feb. 1, 1985, Ser. No. 697,429

Int. Cl.[4] F16J 15/32

U.S. Cl. 277—152 9 Claims



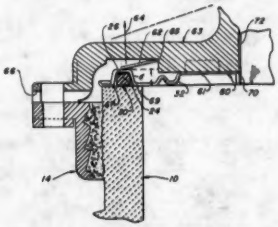
1. A vehicle air conditioning compressor including a main body having a rotatable shaft extending therefrom, an annular seal assembly adapted to be mounted in said compressor main body and to sealingly engage said rotatable shaft to define an internal chamber in said main body, said chamber containing a pressurized mixture of freon and lubricating oil, said seal assembly including an annular support housing adapted to be sealingly secured to said compressor main body in coaxial relationship with said rotatable shaft, an annular resilient polytetrafluoroethylene seal element having an outer annular periphery sealingly secured to said support housing and an inner annular periphery adapted to sealingly engage said rotatable shaft, said inner periphery of said seal element extending axially inwardly relative to said outer periphery along said shaft into said pressurized chamber, said outer annular periphery and said inner annular periphery being connected by a radius portion of said seal element, said inner annular periphery terminating in contact with said rotatable shaft, said pressurized mixture of freon and lubricating oil exerting a force on the side of said sealing element which faces said chamber to cause said inner periphery of said seal element to be urged into sealing engagement with said rotatable shaft.

4,583,750

SEALING ARRANGEMENT

Leonard V. Chabala, Maywood, and Chester H. Lin, Skokie, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Apr. 10, 1985, Ser. No. 721,612
Int. Cl.[4] F16J 15/10
U.S. Cl. 277—168 14 Claims



1. A seal arrangement for providing predetermined sealing characteristics to a defined sealing path on a defined sealing surface of a first member when a second member is clamped to the first member, the seal arrangement accomodating variations in the first member, the second member, and the mounting locations thereof, the seal arrangement comprising:

an elastically deformable sealing member having a predetermined cross section and being disposed along the defined sealing path; and

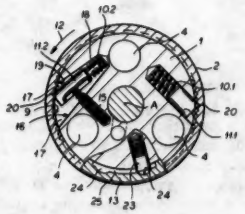
means receiving a clamping force with respect to the defined sealing surface for establishing predetermined deformation of said sealing member, said deformation-establishing means comprising a diaphragm member, said diaphragm member being generally planar and including portions for defining a predetermined sealing member recess for receiving said sealing member, said deformation-establishing means further comprising means independent of said sealing-member recess-defining portions of said diaphragm member for receiving the clamping force and for positioning said seal-member recess-defining portions in a predetermined manner with respect to the defined sealing surface.

4,583,751

LOCKING DRILL CHUCK WITH PROTECTION AGAINST OVERTIGHTENING

Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Fed. Rep. of Germany

Filed Feb. 15, 1985, Ser. No. 702,053
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1984, 3405511
Int. Cl.[4] B23B 31/12; G05G 5/18
U.S. Cl. 279—1 K 7 Claims



1. A drill chuck comprising:

a chuck body centered on and rotatable about an axis and formed with a plurality of guides spaced about and extending at an acute angle to the axis;

respective jaws displaceable along the guides between axial front positions relatively close together and axial back positions spaced relatively far apart;

an adjustment ring carried on the body and operatively connected to the jaws for movement from the outer to the inner positions on rotation of the adjustment ring about the axis in a tightening direction on the chuck body, the adjustment ring being formed with an array of inwardly directed ratchet teeth;

an antiloosening detent engageable generally radially outwardly with the teeth of the adjustment ring;

a spring braced between the antiloosening detent and the body and urging the antiloosening detent outward into engagement with the teeth, the antiloosening detent being angled relative to the adjustment ring such that when engaging between the teeth of the adjustment ring, the antiloosening detent substantially blocks rotation of the adjustment ring on the body opposite to the tightening direction while ratcheting and permitting rotation of the adjustment ring on the body in the tightening direction;

an antitightening detent engageable generally radially outwardly with the teeth of the adjustment ring;

a spring braced between the antitightening detent and the body and urging the antitightening detent outward into engagement with the teeth, the antitightening detent being angled relative to the adjustment ring such that when engaging between the teeth of the adjustment ring, the antitightening detent generally blocks rotation of the adjustment ring on the body in the tightening direction while ratcheting and permitting rotation of the adjustment ring on the body opposite to the tightening direction;

a lockout element engageable with both of the detents and displaceable between a holdback position holding the detents out of engagement with the adjustment ring and a freeing position permitting the detents to engage with and block rotation of the adjustment ring;

a guide surrounding the antitightening detent and defining at least one stop therefor, the antitightening detent being displaceable angularly in the respective guide; and

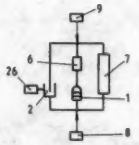
a side spring urging the antitightening detent angularly opposite to the tightening direction in the guide away from the stop, whereby when the antitightening detent is engaged with the teeth it can move in the tightening direction with the adjustment ring only until it engages the stop.

4,583,752

SPRING-SYSTEM FOR MOTOR VEHICLES

Elmar Breitbach, Göttingen, Fed. Rep. of Germany, assignor to Deutsche Forschungs -und Versuchsanstalt für Luft -und Raumfahrt e.V., Fed. Rep. of Germany

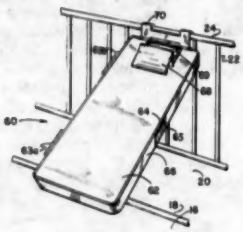
Filed Mar. 29, 1984, Ser. No. 594,782
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1983, 3312895; Mar. 22, 1984, 3410473
Int. Cl.[4] B60S 9/00
U.S. Cl. 280—6 R 5 Claims



1. A suspension system adapted to be used with a motor vehicle for insertion between the sprung and unsprung masses of the motor vehicle comprising, in combination, suspension

spring means with relatively high positive rigidity; a magnetic correcting spring arranged in parallel with said suspension spring in unstable equilibrium and having negative rigidity at zero-crossover of its force-travel characteristic; means for determining the operating point of the suspension system in relation to the normal height of the vehicle above a road due to stationary loads; and means for adjusting zero-crossover of said magnetic correcting spring relation to a determined operating point; and with said correcting spring comprising two stacks of permanent magnets, one of said stacks being connectable to the sprung mass and the other including connectable to the unsprung mass, and with each stack including a plurality of adjacent permanent magnets stacked one behind the other in a direction of relative movement between the sprung and unsprung masses and with intermediate pieces of soft iron disposed between said adjacent permanent magnets and with like poles of said adjacent permanent magnets adjoining said soft iron intermediate pieces, and the magnetizing axes of said permanent magnets oriented in parallel with said direction of relative meovement.

4,583,753
DESK ATTACHMENT FOR SHOPPING CART
Charles G. Economy, 315 Crosstree La., Atlanta, Ga. 30328
Filed Jul. 19, 1984, Ser. No. 632,622
Int. Cl.[4] B62B *39/00*
U.S. Cl. 280—33.99 A **5 Claims**



1. A desk attachment for a shopping cart having a rear compartment defined in part by front and rear walls and collapsible as between said front and rear walls, the desk attachment being readily removable from the cart by the shopper, said desk attachment comprising:

a planar desk platform of a length sufficient to span said front and rear walls when the compartment is open;

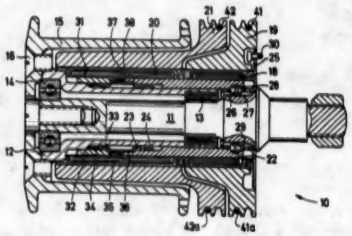
an enclosure within said desk platform;

a lid attached to said desk platform and selectively operative to open or close said enclosure, said lid having an upper surface comprising a writing surface; and

a hanger pivotably attached at one end of said platform and having hook means operative for readily disengagable and pivotable engagement with the top of one of said walls, said hanger being selectively movable into said enclosure of the desk platform when disengaged from said one wall, whereby the desk attachment is readily removed and carried by the shopper when leaving the store.

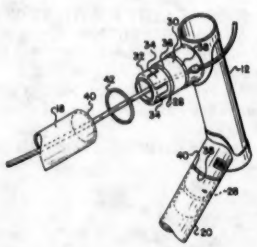
4,583,754
TRANSMISSION UNIT
Klaus Seeliger, Birkenkopfstr. 10, 3500 Kassel, Fed. Rep. of Germany
Filed Oct. 2, 1984, Ser. No. 656,923
Int. Cl.[4] B62M *1/14*
U.S. Cl. 280—246 **10 Claims**

1. A transmission for muscle-operated vehicles or appliances for converting forward and backward movements into rotational movement having a constant direction of rotation comprising a first and a second freewheeling device, each having a plurality of one-way roller bearings which impinge on a forward drive tube and which are driven alternately in opposite directions and thereby act cooperatively on a hollow shaft; the hollow shaft having first and second external splines and being located centrally of the forward drive tube and supported by a central stub shaft having axial grooves; a clutch comprising said forward drive tube having an internal annular groove and a third internal spline, and a reverse drive tube rotatably secured to the forward drive tube having a fourth internal spline, the first and second freewheeling devices driving the forward drive tube in one directiion of rotation and freewheeling in the



other direction, wherein at least one additional freewheeling device is driven at the same time, though it operates in the opposite direction on the reverse drive tube of the clutch, the clutch mechanism either permitting the freewheeling devices to act in the forward direction on the hollow shaft for forward motion when the first and third splines are engaged, or permitting the third freewheeling device to act in the opposite direction on the hollow shaft for reverse motion when the second and fourth splines are engaged, or permitting none of the freewheeling devices to act on the hollow shaft during idling when the splines are disengaged.

4,583,755
BICYCLE FRAME
Robert L. Diekman; Timothy J. Dietz; Lloyd W. Docter, and Verlon D. Downing, all of Centerville, Ohio, assignors to Huffy Corporation, Dayton, Ohio
Filed Dec. 4, 1984, Ser. No. 677,707
Int. Cl.[4] B62K *19/22*
U.S. Cl. 280—281 R **18 Claims**



16. A bicycle frame comprising:

a plurality of lugged members including a head tube adapted to receive a handlebar and front fork assembly, a bottom bracket adapted to receive a crank assembly, and a seat bracket adapted to receive a seat post;

each of said lugged members including a pair of substantially cylindrical stub inserts, each having a squared shoulder at a base thereof, an inner portion with a first outside diameter, and an outer pilot portion having a second outside diameter less than said first diameter;

said pilot portions each having a plurality of longitudinal

grooves evenly spaced thereabout, and a circumferential groove, said grooves forming a segment having a diameter less than said second diameter;

a plurality of substantially cylindrical tubes joining said lugged members together, each having opposing, squared open ends telescoping over selected ones of said stub inserts and having an inside diameter sized to form a slip fit with said pilot portions and an interference fit with said inner portions;

adhesive means located in said grooves for forming a bond between said pilot portions and said tubes; and

a plurality of annular trim rings positioned between said squared ends and said squared shoulders, said rings being made of a material more flexible than materials used to form said tubes and said lugged members.

4,583,756

ANTI-BUCKLING CONTROL SYSTEM FOR ARTICULATED VEHICLES

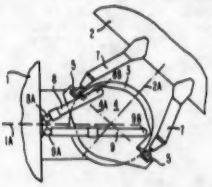
Walter Hornung, Stuttgart; Gerhard Hametner, Unterensingen; Wolfgang Ackermann, Stuttgart; Lothar Benkowitz, Hochdorf; Peter Hofmann, Stuttgart; Dieter Koch, Aichwald, and Herbert Hemming, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,097

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305758

Int. Cl.⁴ B62D *53/00*

U.S. Cl. 280—432 **20 Claims**



1. Anti-buckling control system for steerable articulated vehicles of the types having a first vehicular section hingedly connected to a second vehicular section, comprising:

pivot support means fixedly arranged at the first vehicular section,

cross piece means pivotally supported at the pivot support means for pivotal movement about a vertical buckling axis,

connecting arm means carried by the second vehicular section,

cross piece pivot connection means pivotally connecting the connecting arm means to the cross piece means at a horizontal pivot axis of the cross piece means,

first and second lengthwise adjustable control devices, said first control device being connected to the first vehicular section at a first control device connection joint and to the second vehicular section at a second control device connection joint, said second control device being connected to the first vehicular section at a third control device connection joint and to the second vehicular section at a fourth control device connection joint,

and control means for forcibly adjusting the length of the first and second control devices to resist relative pivotal movement of the cross piece means and the pivot support means,

wherein said first and third control device connection joints are disposed closely adjacent one another and said second and fourth control device connection joints are spaced from one another so that said control devices exhibit a V-shaped configuration open toward and the second vehicular section when said first and second vehicular sections are in a straight driving condition, and wherein the second and fourth control device connection joints are disposed at the second vehicular section side of a vertical plane extending laterally through the vertical buckling axis when the first and second vehicular sections are in a straight driving condition said second and fourth control device connection joints being disposed at the second vehicular section side of said vertical plane for enhanced resistance to larger rotational moments about said buckling axis.

4,583,757

SAFETY BINDING FOR SKI

Georges P. J. Salomon, Annecy, France, assignor to Salomon S.A., Annecy, France

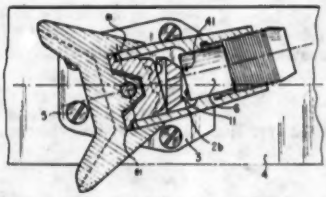
Continuation of Ser. No. 376,754, May 10, 1982, Pat. No. 4,457,533, which is a continuation of Ser. No. 106,148, Dec. 21, 1979, abandoned. This application May 3, 1984, Ser. No. 606,603

Claims priority, application France, Dec. 28, 1978, 78 37119

The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.

Int. Cl.⁴ A63C *9/08*

U.S. Cl. 280—628 **2 Claims**



1. A safety binding for use with a ski, said binding comprising:

(a) a holding member adapted to hold one end of a ski boot onto said ski;

(b) a support member adapted to be attached to said ski;

(c) an elastic system; and

(d) an intermediate member; said elastic system acting to press said intermediate member against said support member; said holding member and said intermediate member being cooperatively associated to pivot together with respect to said support member, against the bias of said elastic system, and wherein said intermediate member is spaced from said support member, with substantially no relative movement between said holding and intermediate members whenever said holding and intermediate members pivot with respect to said support member for release of said boot.

4,583,758

MOBILE BODY SUPPORT VEHICLE

Brett H. Runion, 5 Chapel Oak Rd., Pittsburgh, Pa. 15238; Brian A. Novak, Hermitage, and Gary Horne, Glenshaw, both of Pa., assignors to Brett H. Runion, Pittsburgh, Pa.

Filed Mar. 1, 1985, Ser. No. 707,081

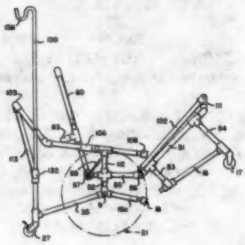
Int. Cl.⁴ B62B *7/06*

U.S. Cl. 280—644 **12 Claims**

1. A collapsible mobile body support vehicle comprising:

(a) a subframe comprised of a longitudinal support member having at least two segments connected by a releasable coupling, a front cross bar attached to one end of said longitudinal support member and a rear cross bar attached to the opposite end of said longitudinal support member, and intermediate cross bar attached to said longitudinal support member between said front cross bar and said rear cross bar, at least one wheel pivotably attached to the front cross member and at least one wheel pivotably attached to the rear cross bar;

(b) a body frame comprised of a generally U-shaped front segment positioned above said subframe, a pair of rear side rails pivotably connected to said front segment at its ends, a rear support connecting said rear side rails to said intermediate cross bar, and a front support connecting said U-shaped frame to said front crossbar wherein said pivotable connections are positioned relative to said subframe releasable coupling so that when said coupling is released



said U-shaped front segment may be folded back over said rear side rails and over a portion of said subframe;

(c) a pair of intermediate wheels mounted to either side of said subframe along an axis generally parallel to said intermediate cross bar and between said front bar member and said rear cross bar; and

(d) fabric attached to said body frame to form a surface adapted to receive and support a user's body.

4,583,759

UPPER SUSPENSION ARM SUPPORT STRUCTURE

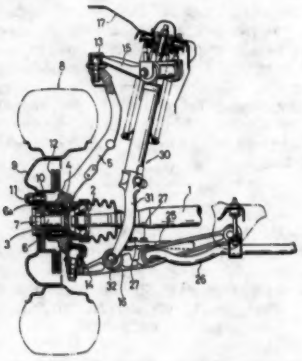
Yozo Kami, Saitama; Masaaki Minakawa, and Kanji Kubo, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,296

Claims priority, application Japan, Nov. 24, 1982, 57-206660

Int. Cl.[4] B60G *3/00*

U.S. Cl. 280—673 **7 Claims**



1. A supporting structure to connect a pivoting arm to a vehicle body, comprising two bolt means mounted at spaced locations to connect said structure to the vehicle body, said bolt means being arranged such that neither bolt means is substantially aligned in the horizontal plane, each said bolt means having an integral head including a mounting means, said head protruding downwardly, and means to pivotally connect the pivoting arm to said mounting means of each said head.

4,583,760

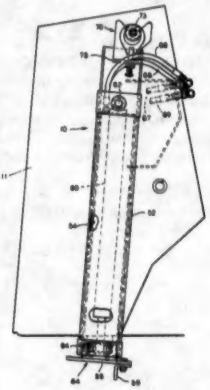
VEHICLE STABILIZER ATTACHMENT AND METHOD

Gaylen E. Halstensgaard, Milnor; John W. Henline, and Orlan J. Loraas, both of Lisbon, all of N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Sep. 4, 1984, Ser. No. 647,006

Int. Cl.[4] B66B *9/20*

U.S. Cl. 280—766.1 **10 Claims**



9. A vehicle stabilizer apparatus, comprising

a pair of outer tubular members attached to the opposite sides of the vehicle in vertically disposed relation,

a pair of inner tubular members arranged for reciprocal movement inside said outer tubular members respectively,

a pair of hydraulic cylinders within said inner tubular members respectively for moving said inner members reciprocally,

a pair of latching mechanisms adjacent the upper end of said outer tubular members for securing said outer tubular members respectively to said vehicle to install them on the vehicle,

a pair of interengaging mechanisms adjacent the other ends of said outer tubular members respectively for securing said other ends of said outer tubular member to said frame when said upper ends are secured,

a first conduit interconnecting the head ends of said hydraulic cylinders,

a second conduit interconnecting the rod ends of said hydraulic cylinders,

a two-way valve having a neutral position and two other positions,

one of which is to pressurize the conduit connecting the two head ends and the other of which is to pressurize the conduit connecting the two rod ends,

whereby when said valve is in the neutral position hydraulic fluid can flow through the said two conduits in opposite directions to adapt the stabilizer apparatus to uneven terrain.

4,583,761

FRAMES FOR SCOOP LOADERS, FORK LIFTS AND THE LIKE

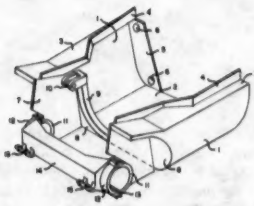
Dieter Nagel, Grosswallstadt; Bernhard Götz; Elmar Causin, both of Aschaffenburg, and Werner-Georg Schroder, Grossotheim, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 7, 1984, Ser. No. 669,231

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1983, 3341740

Int. Cl.[4] B62D *61/08*

U.S. Cl. 280—781 14 Claims



1. In a frame for a scoop loader, fork lift or the like having two lateral carriers, whose lower sections are bent to the middle of the vehicle and are connected with each other to form a trough-like frame that is open upward and at the front and back, said frame being adapted to be closed toward the back by a counterweight that can be connected with the lateral carriers, the improvement comprising a bearing box half for the support of a wheel shaft located at the front end of each lateral carrier, a pair of mating bearing box halves located on a separate connector component, which constitutes a removable front cross piece for the frame and with the bearing box halves carries a wheel shaft, and means for fastening said connector component to said lateral carriers to form a completed integral rigid but removable assembly.

4,583,762

SAFETY BELT FOR MOTOR VEHICLES

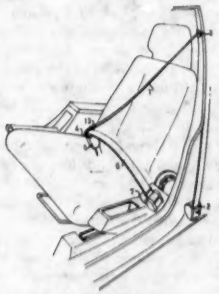
Hans Carlstedt, Partille, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Oct. 9, 1984, Ser. No. 658,805

Claims priority, application Sweden, Oct. 14, 1983, 8305660

Int. Cl.[4] A62B *35/00*

U.S. Cl. 280—801 8 Claims



1. A safety belt for motor vehicles, comprising a lap webbing and a chest webbing, the lap webbing having one end joined to a first individual take-up mechanism, the chest webbing having one end joined to a second individual take-up mechanism separate from said first take-up mechanism, each said take-up mechanism in opposition to the take-up force permitting extension of the active portion of each webbing, both said take-up mechanisms being disposed on the same side of a vehicle seat, the webbing length which can be taken up by the chest webbing take-up mechanism being substantially shorter than the webbing length which can be taken up by the lap webbing take-up mechanism, and means to feed out webbing only from the lap webbing take-up mechanism when putting on the belt.

4,583,763

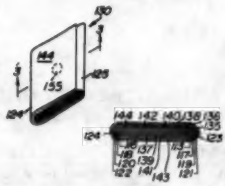
INFORMATION FOLDER CONSTRUCTION

James H. Shacklett, Jr., 2025 Joshua Rd., Lafayette Hill, Pa. 19444

Continuation-in-part of Ser. No. 103,593, Dec. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 940,073, Aug. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 752,446, Dec. 20, 1976, abandoned. This application Sep. 14, 1984, Ser. No. 650,516

Int. Cl.[4] B42D *19/00*

U.S. Cl. 281—5 5 Claims



1. An information folder construction comprising a strip of flexible and foldable paper sheet material, a plurality of at least three generally equally spaced parallel scores formed in said strip generally normal to the longitudinal strip dimension, said scores defining of the strip material a plurality of at least four generally rectangular panels, informative indicia marked on said strip including identifying indicia on a front panel adjacent to one end panel, and folds along said scores all facing toward one side of said strip and hingedly connecting said panels for swinging movement into generally congruent overlying relation with each other defining a generally planar pad of tight oblate flat spiral configuration wound about the other end panel having adjacent convolutions in complete and, continuous contact with each other, said front panel and said one end panel being outermost on opposite sides of said pad, and detachable adhesive securement means interposed between and securing only said one end panel to the next adjacent underlying panel, the remaining panels being entirely free of adhesive and unsecured except for said hinged connections, to releasably retain said panels in pad defining relation.

4,583,764

WORKING FOLDER

Fritz Steffen, Mühlenweg 22, 4902 Bad Salzuflen 1, Fed. Rep. of Germany

Filed May 7, 1984, Ser. No. 607,942

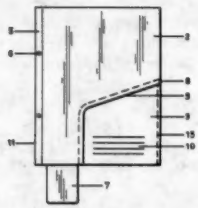
Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316828

Int. Cl.[4] B42D *3/00, 3/02*

U.S. Cl. 281—31 10 Claims

1. A working folder comprising first and second cover panels, said panels being connected together along one of their edges to form a common fold edge, said folder including a pocket panel which together with the first cover panel forms an insertion pocket in said first cover panel, and a cut-out portion in said second cover panel, said pocket panel being integrally connected to said first cover panel by a fold edge along at least a part of an edge of said first cover panel to said

first cover panel along at least one further edge of said first cover panel, the edge of said cut-out portion circumscribing



the peripheral edge of the pocket panel when said first and second cover panels are folded one upon the other.

4,583,765

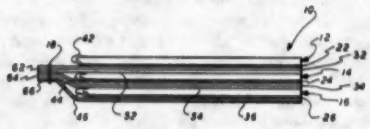
MULTI-COPY SELF-STICK LABEL SET

Emanuel Messinger, 23 HoneySuckle Row, Sunset Ridge St. James, Barbados (20334)

Filed Oct. 17, 1983, Ser. No. 542,759

Int. Cl.[4] B41L *1/20*; B42D *15/00, 5/00*

U.S. Cl. 282—9 R **5 Claims**



1. A label set; comprising:

(a) a first label group;

(b) a second label group;

(c) fastening means attaching said first label group and said second label group together to form a label set;

(d) said first label group including at least a first label formed to a predetermined height and width from contact type film material and having an information surface and an adhesive surface of light tack self-stick type adhesive; and a first carrying member for said first label;

(e) said first carrying member being formed to a predetermined height and width and from film material with a first surface to removably receive said adhesive surface of said first label and a second surface coated with carbonized matter that will transfer to an adjacent surface when pressure is applied to said first surface of said carrying member;

(f) said second label group including at least a second label formed to a predetermined height and width from contact type film material and having an information surface and an adhesive surface of light tack self-stick type adhesive, and a second carrying member formed to a predetermined height and width for releasably carrying said second label by having said adhesive surface disposed against a surface thereof;

(g) said label set being assembled with said carbonized matter coated surface of said first label disposed proximate said information surface of said second label so that information applied to said first label with sufficient pressure will appear upon said second label.

4,583,766

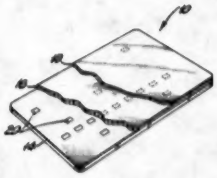
SECURE BADGE FOR INFRARED BADGE READER AND PROCESS FOR MAKING SAME

Kenneth R. Wessel, 26 Beech St., White Plains, N.Y. 10604, assignor to Kenneth R. Wessel, WhitePlains, N.Y.

Filed May 8, 1984, Ser. No. 608,144

Int. Cl.[4] B42D *15/00*

U.S. Cl. 283—88 **15 Claims**



1. A security badge for use with an infrared badge reader, said badge being generally planar in configuration and comprising an integral polyvinylchloride body and at least one infrared blocking mark disposed interiorly of and contiguous with said body, to define at least one coded portion and an uncoded portion, with the coded portion transmitting no more than 0.05% infrared light at 930–950 nanometers and with the uncoded portion being able to transmit approximately between 0.9%–1.5% infrared light at 950 nanometers.

4,583,767

PIPE COUPLING

Albert F. Hansen, 8 Punga Grove, Whangarei, New Zealand

Filed Aug. 10, 1984, Ser. No. 639,913

Int. Cl.[4] F16L *33/22*

U.S. Cl. 285—40 **5 Claims**

1. A pipe coupling for coupling to a hard-walled semi-rigid pipe, including a tubular portion over which the end of a pipe to be coupled may be engaged, said tubular portion including an annular boss having an external screw thread carrying a nut having an internal screw thread, on which boss the nut is rotatable so as to be movable on to the exterior of the end of a pipe engaged on said tubular portion to clamp the pipe to said tubular portion, wherein said nut comprises two concentric bores of different diameters, the bore of lesser diameter being complimentary screw threaded so as to be engagable with said screw threaded annular boss and the bore of greater diameter being tapered outwardly from the interior of the nut and being screw threaded with threads of a buttress-shark tooth form so as to be engagable with the outside surface of said pipe, the screw threads of said lesser and greater diameter bores being of the same hand and of a substantially constant pitch, said tubular portion terminating in a nose tapered with an increasing diameter from the leading edge of the nose, a plurality of annular ridges of a buttress form on said tubular portion between said nose and the said boss, said tubular portion being tapered so as to have a reducing average outside diameter from adjacent said boss to said nose; whereby as said nut is screwed onto said annular boss said buttress-shark tooth threads engage the outside surface of the pipe and cut a thread into said pipe, with the displaced pipe material forming behind the thread cut

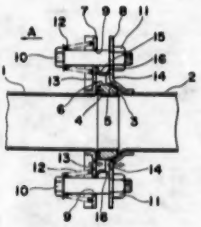
in said pipe, and the ridges on said tubular portion sealingly gripping said pipe.

4,583,768

FLEXIBLE EXHAUST COUPLING

Shigehiko Aoki; Shizuo Ocotani, both of Hiroshima; Toshinobu Shimotaka, Kure, and Yoshitaka Nakamura, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 9, 1984, Ser. No. 569,491
Claims priority, application Japan, Jan. 17, 1983, 58-6343
Int. Cl.[4] F16L 53/00
U.S. Cl. 285—41 9 Claims



1. In an exhaust system for an automobile engine for the discharge of exhaust gases from the engine to the atmosphere, a flexible exhaust coupling comprising:

first and second tubular passage elements each having first and second ends opposite to each other, the first ends of the respective first and second passage elements resiliently yieldably connected together whereas the second end of the first passage is fluid-connected with the engine for receiving the exhaust gases to be discharged;

a synthetic-resin coated ring seal member mounted exteriorly on the first end of one of the first and second passage elements and having a spherical sealing surface defined therein so as to confront the other of the first and second passage elements, the first end of said other of the first and second passage elements being radially outwardly flared to provide a mating spherical surface for the receipt of, and sliding engagement with, the spherical sealing surface of the ring seal member;

a first flange providing rigidly on said one of the first and second passage elements so as to extend radially outwardly therefrom and positioned on one side of the ring seal member remote from said other of the first and second passage elements, said first flange having a first air passage defined therein adjacent to and radially outwardly of the ring seal member;

a second flange provided rigidly on said other of the first and second elements so as to extend radially outwardly therefrom and positioned on one side of the mating spherical surface remote from said one of the first and second passage elements, said second flange having a second air passage defined therein adjacent to, and radially outwardly of, the radially outwardly flared first end of said other of the first and second passage elements; and

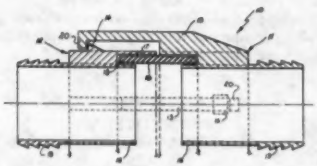
means for resiliently connecting the first and second flanges together while urging the first and second flanges in a direction close towards each other to permit the spherical sealing surface to gas-tightly and slidingly contacting the mating spherical surface thereby constituting a resiliently yieldable joint between the first and second passage elements.

4,583,769

HOSE COUPLING

Peter Bortolin, 4/10 Cannon St., Stanmore, New South Wales 2048, Australia

Filed Jun. 11, 1984, Ser. No. 619,063
Int. Cl.[4] F16L 35/00
U.S. Cl. 285—73 3 Claims



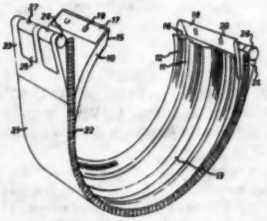
1. A hose coupling fixed to the end of a first hose engaging a further coupling of the same configuration fixed to the end of another hose so that the two hoses are sealingly connected, said coupling comprising: a hollow body having a passage extending through it so as to terminate at one end in a first opening communicating with the hose and at the other end in a second opening facing the other coupling, said body having a spigot defining said first opening, said spigot having an outer diameter fitted within the end of the hose so as to to be retained therein, a sleeve defining said second opening, said sleeve having substantially the same outer diameter as said spigot and receiving a portion of hose extending to and over the sleeve of the other coupling so as to sealingly connect the two couplings, said body also having an annular flange co-axial and co-extensive with said sleeve and surrounding said sleeve so as to define an annular cavity between the sleeve and annular flange receiving the hose portion, cooperating locking means engaging the locking means of the other coupling preventing relative axial movement between the two couplings when in use, and wherein said flange projects longitudinally beyond said sleeve so as to support said hose portion between said couplings via cooperation of the flange of said other coupling.

4,583,770

PIPE JOINT SEAL

Sven I. Kreku, Vindeln, and Lars K. Lennartsson, Torekov, both of Sweden, assignors to Oy Wilk & Hoglund AB, Vaasa, Finland

PCT No. PCT/SE83/00379, § 371 Date Jul. 3, 1984, § 102(e) Date Jul. 3, 1984, PCT Pub. No. WO84/01807, PCT Pub. Date May 10, 1984
PCT Filed Nov. 3, 1983, Ser. No. 629,790
Claims priority, application Sweden, Nov. 4, 1982, 8206265; Jan. 31, 1983, 8300476
Int. Cl.[4] F16L 25/00
U.S. Cl. 285—177 7 Claims



1. A motion-absorbing pipe joint seal comprising:

an insert,

said insert being made of elastic material and adapted to be circumferentially placed around the pipe joint and the

pipe sections adjacent thereto, with transverse edge faces of said insert engaging one another,

a union piece,

said union piece being adapted to be clamped around said insert placed around the pipe joint,

means on the inner side of said insert for engaging with the pipe sections, said means defining recesses extending longitudinally along said insert and widening in a direction away from the inner side of said insert,

and a plastic sealing compound within said recesses,

said sealing compound retaining its plasticity at prevailing temperature and pressure variations.

4,583,771

CONCRETE PIPE

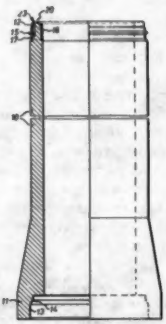
Gunnar K. Wästerberg, Stafettgatan 123, S-273 00 Tomelilla, Sweden

Filed Aug. 16, 1983, Ser. No. 523,529

Claims priority, application Sweden, Aug. 18, 1982, 8204742

Int. Cl.[4] F16L *49/00*

U.S. Cl. 285—230 **3 Claims**



1. A concrete pipe, especially for sewers consisting essentially of a spigot end, a socket end with a portion for receiving the spigot end of an adjacent identical pipe, and a cylindrical pipe main part located between said spigot and socket ends, the spigot end being formed of an annular cap of plastic material having an inner wall whose inner diameter corresponds to the inner diameter of the main part of the pipe, an outer wall whose outer diameter maximally corresponds to the outer diameter of said main part of the pipe, a web interconnecting the cap walls and forming the spigot end surface of the pipe, and a portion adapted to accommodate a sealing ring on the outer side of the cap outer wall, said cap having an axial length which maximally corresponds to the depth of the spigot-receiving portion of the socket end, wherein the cap has radially and axially oriented reinforcing walls extending between the walls for substantially the entire axial length of the cap and made in one piece therewith.

4,583,772

PIPE FITTING INTERLOCKING SYSTEM

Efrain D. Vassallo, and Jose E. Valls, both of Ponce, P.R., assignors to Vassallo Research & Development Corporation, Ponce, P.R.

Continuation-in-part of Ser. No. 468,320, Feb. 22, 1983. This application Sep. 18, 1984, Ser. No. 651,819

The portion of the term of this patent subsequent to Oct. 2, 2001, has been disclaimed.

Int. Cl.[4] F16L *17/02*

U.S. Cl. 285—347 **4 Claims**

1. A plastic pipe fitting interlocking system comprising

a central body of predetermined configuration and comprising at least one end portion arranged to receive thereon a hub member for enabling a pipe section to be joined to said at least one end portion of the central body, the hub member having a bore; defining an inner periphery

the said at least one end portion terminating in a free end, the free end terminating in an end terminus and being an annulus of hollow cylindrical configuration defined between an interior peripheral wall surface and an exterior peripheral wall surface and having a longitudinal axis;

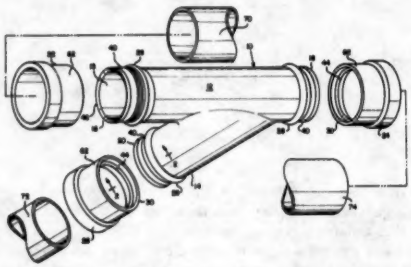
a lock junction means formed in the said at least one end portion in rearward longitudinal spaced relation from the end terminus to provide a self locking interconnection,

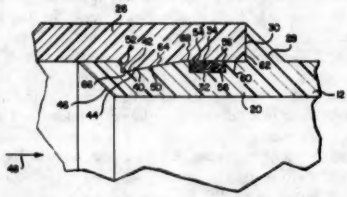
the lock junction means comprising a circular lock which is defined in part by an inclined side, the inclined side being inclined circularly inwardly from the exterior peripheral wall surface toward the interior peripheral wall surface,

the lock junction means having no adhesive,

the lock junction means defining a forward cylindrical portion of the annulus forwardly of the circular lock,

the lock junction means comprising a radially extending shoulder which outwardly projects from the central body exterior peripheral wall surface,





the shoulder having a planar front surface and a rear surface which extends from said planar front surface to said external peripheral wall surface, the shoulder being rearwardly spaced from the rearward portion of the annulus;

a hub member connected to the said central body end portion at the lock junction means to provide an enlarged connector for receiving an adjacent length of pipe,

the hub member having a connecting end circularly and outwardly adjacent to the central body end, the connecting end terminating in a planar end,

the hub member connecting end comprising a circular, radially inward projection of configuration matching said circular lock to lock within the said circular lock without adhesive, the said shoulder being contacted by the hub member planar end when the circular inward projection of the hub member locks within the circular lock of the lock junction means;

a seal recess provided between the exterior periphery of the at least one end portion of the central body and the inner periphery of the hub member, the seal recess comprising a peripheral, rectangularly shaped circular groove provided in the central body end, the groove being rearwardly spaced

from the lock junction means, the groove being defined by an annular flat bottom and parallel, spaced, forward and rearward, radially outwardly extending sides extending from the bottom,

the said central body end defining a rearward cylindrical portion of the annulus rearwardly of the rear groove side,

portions of the hub member connecting end overlying and contacting the said forward and rearward cylindrical portions of the annulus; and

an annular resilient gasket seated within the groove to seal the connection between the hub member connecting end and the said central body free end,

the gasket being biased against the said inner periphery of the hub member to provide a self-sealing interconnection, the gasket comprising an arched base only partly in contact with the bottom of the peripheral groove both before and after the hub member and the central body are interconnected, the gasket base comprising an annular arch and a circular top spaced from the base, the gasket being greater in height then the depth of the peripheral groove, the gasket top being pressed against and deformed against the inner periphery of the hub member bore.

4,583,773

RELEASABLE TUBULAR CLAMPS FOR THE CONNECTION OF CYLINDRICAL OR PROFILED TUBES

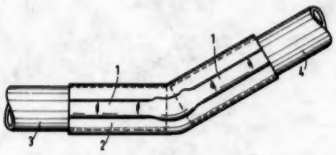
Manfred Janssen, Moerserstr. 398, D-4150 Krefeld; Volker Schmidt, Muelheim, and Theodor Bachmann, Langenfeld, all of Fed. Rep. of Germany, assignors to Manfred Janssen, Krefeld, Fed. Rep. of Germany

PCT filed Jun. 29, 1983, Ser. No. 584,553

PCT No. PCT/DE83/00121, § 371. Date Feb. 29, 1984, § 102(e). Date Feb. 29, 1984, PCT Pub. No. WO/84/00202, PCT Pub. Date Jan. 19, 1984.

Int. Cl.⁴ F16L *13/14;* B65D *63/02*

U.S. Cl. 285—382 **6 Claims**



1. A connection for releasably, sealingly, interconnecting cylindrical or profiled axially abutting metal tubes and including a radially effective clamp characterized by a tubular element in cylindrical contact with ends of the tubes and having a longitudinally running longitudinal rib open towards the interior which before clamping has a U-shaped cross section and whose legs after clamping abut in parts, the clamping jacket in a transition range from the tubular element to the legs deviating from a circular and cylindrical contour and containing material that has flowed as a result of plastic deformation from the legs.

4,583,774

BATTERY DOOR LATCHING MECHANISM

Irving H. Holden, Boca Raton; Robert D. Lloyd, Sunrise; Charles W. Mooney, Lake Worth, and Robert E. Phipps, Pompano Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 4, 1984, Ser. No. 647,097

Int. Cl.⁴ E05C *19/06*

U.S. Cl. 292—19 **2 Claims**

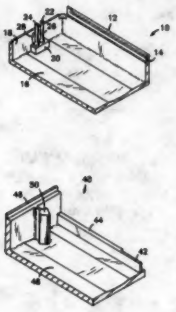
1. A door latch assembly comprising:

a housing for containing electrical apparatus therein, said housing including a compartment having a side wall;

a door capable of slidably engaging said housing so as to cover said compartment, said door including a back wall and a bottom wall oriented in an L-shaped configuration;

a pair of spaced flexible members, connected to said housing and extending substantially parallel to each other and to said side wall;

an engaging member including a rib having opposed ends, said rib being attached to said bottom wall along the



lengthwise dimension of said rib, said rib including a head extending between the ends of said rib and situated facing away from said bottom wall, said head including a tapered portion along the lengthwise dimension of said head, said tapered portion facing away from said bottom wall in a direction perpendicular to said flexible members when said engaging member is urged between said flexible members during closure of said door.

4,583,775

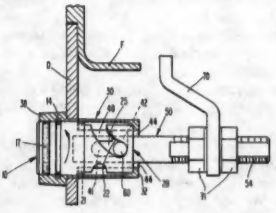
LATCH ASSEMBLY HAVING PULL-UP ACTION

Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Concordville, Pa.

Continuation of Ser. No. 610,961, May 16, 1984, abandoned. This application Sep. 24, 1985, Ser. No. 779,313

Int. Cl.⁴ E05C *5/02*

U.S. Cl. 292—64 **20 Claims**



1. A pull-up latch mechanism comprising:

a. a fixed support base having an inwardly projecting sleeve;

b. a plug-type cap within said support base and coaxial with said base sleeve;

c. a shaft having its outward end supported in said cap and having an intermediate portion supported by said base sleeve, said shaft projecting in an inward direction from said base sleeve;

d. a rotatable sleeve cam coaxial within said base sleeve, said sleeve cam having diammetrically opposed cam slots;

e. a motion-control sleeve fixed within said base sleeve and coaxial with said sleeve cam;

f. a pair of diametrically opposed axially extending motion-control slots in said motion-control sleeve;

g. a pair of diametrically opposed laterally extending motion-control slots in said motion-control sleeve;

h. each of said axial motion-control slots intersecting with one of said lateral motion-control slots at a motion translation position;

i. a cross pin secured to said shaft and extending laterally in opposite directions therefrom, each opposite end of said cross pin projecting into one of said motion-control slots and into one of said cam slots;

j. means interconnecting said cap and said sleeve cam, whereby the application of torque force to said cap moves said cam rotationally;

k. whereby, in response to said cap being moved rotationally in the same one direction, rotational and axial motions are imparted sequentially to said shaft, in that order or in reverse order depending upon the direction of rotation of said cap.

4,583,776

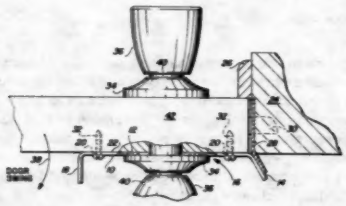
DOUBLE PURPOSE SECURITY PLATE

Donald J. Bouchard, 3920 S. 3rd Ave., Phoenix, Ariz. 85041

Filed Mar. 2, 1984, Ser. No. 585,924

Int. Cl.[4] E05B *17/20*

U.S. Cl. 292—346 **4 Claims**



1. An improved swingable door security plate assembly, the improved security plate for preventing the use of a credit card, or the like, from being used to retract a spring or bolt latch on the door, when the swingable door is closed, from a cooperating latch plate which is installed on a mating door jamb, the mating door jamb being equipped with a door stop, the improvement comprising:

a swingable door;

double ended plate means for mounting on an outside surface of said swingable door, said double ended plate means further comprising:

a main body, said main body having a clearance hole means therethrough for clearing a door set on said outside surface of said swingable door;

a first bent end, said first bent end being bent up from said main body at an angle of approximately forty-five degrees; and

a second bent end, said second bent end being bent up from said main body at an angle of approximately ninety degrees, said double ended plate means being mounted so that one of said first and second bent ends of said plate means is adjacent and cooperatively close to one of the latch plate and the door stop, respectively, when said door is in the closed position.

4,583,777

RETRACTABLE COVER

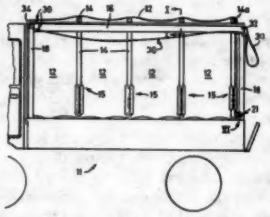
Hermanus L. J. Myburgh, P.O. Box 40268, Arcadia 0007, South Africa

Filed Feb. 9, 1984, Ser. No. 578,512

Int. Cl.[4] B60J *7/06*

U.S. Cl. 296—100 **10 Claims**

1. A cover system comprising, in combination, a flexible sheet material cover and a structural framework defining the volume to be covered, the framework including a fixed frame adapted for fixed mounting on the load body of a lorry or truck and having in use a pair of longitudinally spaced upstanding supports for supporting a central elevated longitudinally disposed track; and a movable frame including at least one spreader longitudinally movably supported on and extending transversely on either side of the track, the cover being



adapted for location over the frame structure with one end thereof adapted for retention on the fixed frame and at least an opposite end thereof adapted for retention on the movable frame.

4,583,778

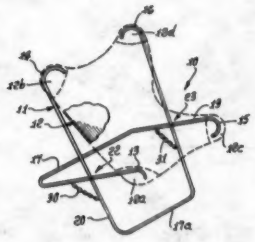
FOLDING KNOCK-DOWN CHAIR, WITH SWINGABLE SEAT SUPPORT

Martin R. Liebhold, 12404 Rochedale La., Los Angeles, Calif. 90049

Filed Feb. 5, 1985, Ser. No. 698,188

Int. Cl.[4] A47C *4/00*

U.S. Cl. 297—56 **8 Claims**



1. In a folding knock-down chair construction adapting the chair to rapid assembly, the combination comprising:

(a) a framework that includes two U-shaped members, the first having a lower cross piece and two first legs that project upwardly and forwardly, and the second having a lower cross piece and two second legs that project upwardly and rearwardly,

(b) pivots interconnecting the first and second legs at two locations, so that said members may swivel between collapsed and extended positions,

(c) means restraining collapse of the legs in said extended position, and

(d) the upper terminals of said legs being hook shaped and loosely and conformingly received in corner pockets of a flexible sheet providing a seat and backrest, and

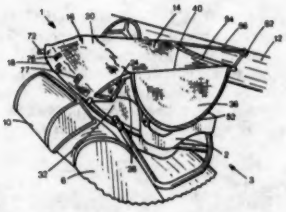
(e) the upper hook shaped terminals of the second legs extending in offset relation to, and mounted to rotate freely about, longitudinal axes that are defined by said second legs, so as to rotate and thereby conform the backrest to the configuration of the sitter.

4,583,779

SUN SHADE FOR AN INFANT'S CAR SEAT

Patricia A. Myers, Post Office Box 228, Boston Bar, British Columbia, Canada (V0K 1C0)

Filed Apr. 18, 1984, Ser. No. 601,691
Int. Cl.[4] A47C 7/10
U.S. Cl. 297—184 14 Claims



1. A sun shade for an infant's car seat having a back with a top and being mounted in a car's interior, the shade comprising:

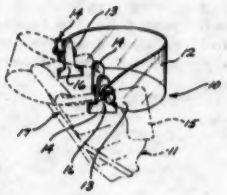
a flexible, sheet-like canopy which is generally horizontal in use, having a pocket formed at a first end for fitting over the top of the back of the infant's car seat and means at a second end, which is opposite the first end, for stretchably anchoring the canopy to a part of the car's interior spaced-apart from the infant's car seat, a pair of side flaps extending along opposite sides of the canopy between the ends thereof, the side flaps having a raised position flat on top of the canopy and extending towards each other away from the sides of the canopy, and a lowered position extending generally vertically downwards from the sides of the canopy.

4,583,780

CHILD'S SEAT SUNSCREEN

Cornelius B. Finn, 5830 212th St. NW., Stanwood, Wash. 98292

Filed Sep. 4, 1984, Ser. No. 646,797
Int. Cl.[4] A47C 7/00
U.S. Cl. 297—184 9 Claims



1. An apparatus attachable to a child's seat for screening sunlight from the face of a seated child, comprising:

a tinted, elongated, flexible sunscreen having substantially flat ends;

a pair of clasps, each clasp having a pair of jaw elements, the jaw elements forming jaws for clasping an edge of the child's seat;

each clasp including first connection means for pivotally connecting an end of the sunscreen to said clasp, the sunscreen being pivotable about a first connection axis when connected to said clasp by the first connection means;

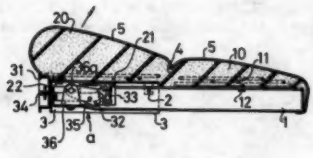
each clasp further including second connection means for pivotally connecting the sunscreen to said clasp, the sunscreen being pivotable about a second connection axis when connected to said clasp by the second connection means, the first and second connection axes being substantially perpendicular to one another.

4,583,781

MOTOR VEHICLE SEAT

Susumu Hatsutta, and Toshio Furukawa, both of Akishimashi, Japan, assignors to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1984, Ser. No. 640,527
Claims priority, application Japan, Aug. 19, 1983, 58-152287
Int. Cl.[4] A47C 3/00
U.S. Cl. 297—284 3 Claims



1. A motor vehicle seat which comprises:

(a) a resilient foam cushion member possessing a buttocks support portion integral with a thigh support portion;

(b) a crease portion defined at the juncture of the buttocks support portion and the thigh support portion of the cushion member, said crease facilitating vertical pivotal movement of the thigh support portion of the cushion member relative to the buttocks support portion thereof;

(c) a fixed lower frame wire embedded within the resilient foam of the buttocks support portion of the cushion member;

(d) a fixed seat frame supporting said fixed lower frame wire;

(e) a movable lower frame wire embedded within the resilient foam of the thigh support portion of the cushion member;

(f) a movable seat frame supporting said movable lower frame wire, said movable seat frame being vertically pivotally connected to said fixed seat frame;

(g) means for locking the position of the movable seat frame relative to the fixed frame member; and,

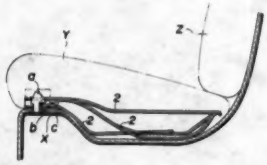
(h) means for unlocking the position of the movable seat member relative to the fixed frame member cooperating with the aforesaid locking means such that one of several new positions of the movable seat member relative to the fixed frame member can be effected and maintained.

4,583,782

MOUNTING STRUCTURE OF A SEAT FOR VEHICLES

Kunio Mikuniya, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1984, Ser. No. 647,027
Int. Cl.[4] A47C 7/00; B60N 1/00
U.S. Cl. 297—440 3 Claims



1. A mounting structure of a seat for vehicles which comprises a standing holder secured onto a car floor, a latch member secured to the base of a seat for inserting said holder, a cushioning material laid on the car floor for giving elasticity to

said latch member upward, said holder including a main body folded in the shape of an angle in the direction of a car width, an inserting portion notched in the horizontal direction at a lower end of the holder at one side in the fore and aft direction of the seat which terminates in an upwardly notched latch portion and said latch member including an inserting hole for inserting the holder and a stopper in the shape of a hook formed along one edge of said inserting hole which engages with the inserting portion of said holder and the latch portion thereof whereby the cushioning material biases the stopper of the latch member into the latch portion of the holder.

4,583,783

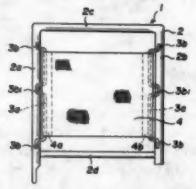
SEAT SUPPORT FOR A VEHICLE SEAT

Shigeru Kanai, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1984, Ser. No. 594,315

Int. Cl.⁴ A47C *7/02*

U.S. Cl. 297—452 **10 Claims**



1. A seat support for a vehicle seat comprising a substantially rectangular seat frame including two opposing side frame members, two connection members respectively mounted to the two opposing side frame members of said seat frame, and a support member comprising a cloth material extended between said two connection members, wherein said two connection members are fixedly secured to said seat frame in a manner that said support member can be extended over and mounted to said seat frame, and wherein said two connection members are bent forwardly in the central portions thereof to form respective lumbar support portions.

4,583,784

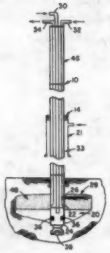
USE OF FOAM AS A BOREHOLE GROUND SUPPORT SYSTEM

Duane C. Uhri, Grand Prairie, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 16, 1984, Ser. No. 571,179

Int. Cl.⁴ E21C *37/06, 45/00*

U.S. Cl. 299—11 **20 Claims**



1. A method for providing support to an overburden area penetrated by at least one drilled hole from which minerals are hydraulically mined from an underground cavity or reservoir containing a liquid comprising:

(a) introducing foam within the cavity which foam floats on said liquid causing pressure to be exerted against the interior of said cavity sufficient to support said overburden area; and

(b) removing said minerals from within said cavity with a hydraulic borehole mining tool while said foam is introduced.

4,583,785

MINERAL WINNING PLOUGH

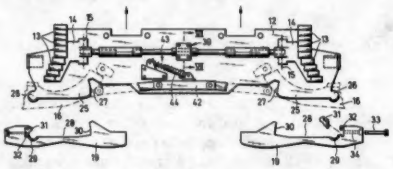
Oswald Breuer, Dortmund; Gerhard Merten, Lünen; Bernd Steinkuhl, Lünen, and Christoph Rassmann, Lünen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lünen, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 598,253

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1983, 3313502

Int. Cl.⁴ E21C *27/32*

U.S. Cl. 299—34 **23 Claims**



1. A plough installation comprising a plough guide and a mineral winning plough movable to and fro along the plough guide, the plough having an elongate plough body provided with cutters, wherein the plough body is provided with a pair of wear-resistant skids which are positioned at the end portions of the plough body and which, in use, make sliding engagement with the plough guide, each of the skids being connected to the plough body by releasable locking means, whereby the plough body can be lifted away from the skids when the locking means are released.

4,583,786

MINERAL MINING PICK AND HOLDER ASSEMBLY

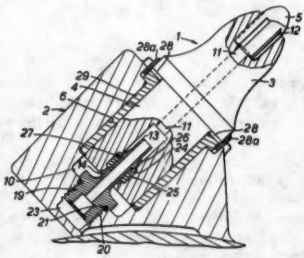
John D. Thorpe, and George Joel, both of Sheffield, Great Britain, assignors to Padley & Venables Limited, Great Britain

Filed Nov. 29, 1983, Ser. No. 556,096

Claims priority, application United Kingdom, Mar. 2, 1983, 8305778

Int. Cl.⁴ E21C *7/08, 35/22;* E21F *5/02*

U.S. Cl. 299—81 **24 Claims**



18. The combination of a mineral mining pick and a pick holder, said pick comprising a body having a head with a cutting part and a shank, said pick holder having a shank socket for receiving said shank and retaining means for releas-

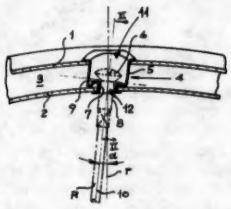
ably retaining the shank in the shank socket, said retaining means comprising a spigot carried by one of said pick and pick holder and extending longitudinally of the shank or shank socket and a coupling socket carried by the other of said pick and pick holder, said coupling socket longitudinally receiving the spigot during insertion of the shank into the shank socket, said retaining means further comprising an annular shoulder on said spigot and an annular resilient sealing means in said socket for engaging against said annular shoulder to resist withdrawal of said spigot from said sealing means and thereby releasably retain the shank in said shank socket and for forming a fluid seal between said spigot and said coupling socket, said retaining means comprising the sole means for releasably retaining the shank in the shank socket.

4,583,787

SLANTING BUSHES FOR RIMS OF BICYCLE WHEELS

Guido Michelotti, Vicenza, Italy, assignor to Campagnolo S.P.A., Vicenza, Italy

Filed Jun. 22, 1984, Ser. No. 623,332
Claims priority, application Italy, Jun. 24, 1983, 21778 A/83
Int. Cl.[4] B60B *1/04, 21/06*
U.S. Cl. 301—58 **6 Claims**



1. Bush for receiving a spoke nipple comprising a head and a threaded shaft, said bush being adapted to be riveted to a bicycle wheel rim of the type having an outer and an inner element connected by two flanks and a series of holes formed through said inner and outer elements, the axis of each said hole being inclined with respect to a first plane perpendicular to the axis of said rim and passing through the said hole and inclined with respect to a second plane including the axis of the rim and passing through the said hole, said bush being adapted to be received in a said hole between said outer and inner elements, said bush comprising a first rigid cylindrical tube for receiving the head of a said nipple and a second rigid cylindrical tube of lesser diameter than and coaxial with said first tube for receiving the shaft of a said nipple, said second and first tubes being partially telescoped and rigidly joined by a connecting element, said connecting element being so designed as to provide a base for the head of the nipple in a plane perpendicular to the axis of the tubes and an abutment surface for the bush to abut against the inside wall of said inner element, such that a said spoke nipple will be received in said bush and securely registered in a position coaxial with a spoke of an assembled tensioned bicycle wheel.

4,583,788

TRACTOR-TRAILER BRAKE SYSTEM

Raymond D. Rubenstein, LaGrange Park, Ill., assignor to J. I. Case Company, Racine, Wis.

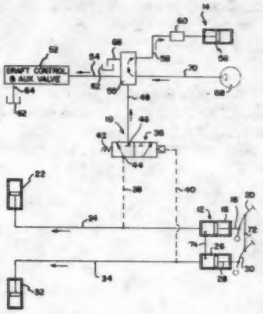
Filed Feb. 15, 1984, Ser. No. 580,417
Int. Cl.[4] B60T *11/24*
U.S. Cl. 303—7 **8 Claims**

1. A fluid power circuit providing a selective engagement of a trailer brake system being coupleable with a tractor brake system and comprising:

said tractor brake system having a first tractor brake for braking first wheel means on one side of a tractor, and

second tractor brake system for braking second wheel means on another side of said tractor;

said trailer brake system being actuated only in response to



simultaneous engagement of said first and second tractor brakes;

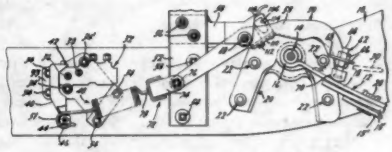
valve means for controlling a fluid flow to said trailer brake system.

4,583,789

REAR SPRING ACTUATED BRAKE PROPORTIONER

James L. Schenten, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 26, 1984, Ser. No. 686,359
Int. Cl.[4] B60T *8/18*
U.S. Cl. 303—22 R **5 Claims**



1. In a vehicle, an improved brake and suspension system including a leaf-type rear spring with one end portion attached to the sprung portion of the vehicle for pivotal movements thereabout and with a mid-portion attached to the unsprung rear wheel assembly, a master brake pressure generating control means for selectively generating brake fluid pressure, brake components associated with each wheel adapted to receive the brake fluid pressure, a proportioning valve means fluidly operative between the master brake control and the rear wheel brake components to regulate the level of fluid pressure transmitted to the latter and controlled by a force input produced in response to loading of the vehicle, an improved vehicle load sensing means, comprising:

bracket means mounted adjacent the one end of the spring;

an elongated lever pivotally supported near its mid-portion by the bracket means so as to position one end portion of the lever in spaced overlying relation to the one end portion of the spring near its attachment to the vehicle sprung portion;

a second end portion of the lever being operably connected to the force input of the proportioning valve means whereby as the one end portion of the spring moves about its attachment to the sprung portion of the vehicle in response to changes in vehicle loading, the lever is pivoted therewith to transmit a force input to the input of the proportioning valve;

an elongated and axially yieldable means operably connect-

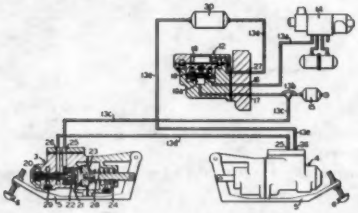
ing the second end of the lever and the proportioning valve to permit substantial movements of the second end of the lever in relation to the proportioning valve in response to changes in vehicle loadings thereby transmitting a resultant force to the proportioning valve corresponding to elongation of the yieldable means.

4,583,790

EMPTY/LOAD BRAKE CONTROL SYSTEM

Daniel G. Scott, Swissvale, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Dec. 17, 1984, Ser. No. 682,625
Int. Cl.[4] B60T *8/20*
U.S. Cl. 303—23 R **7 Claims**



1. An empty/load brake control system for a railway vehicle having sprung and unsprung members comprising:

(a) a fluid pressure actuated brake cylinder device;

(b) a brake cylinder pressure control valve device;

(c) proportional valve means between said control valve device and said brake cylinder device for relaying brake cylinder delivery pressure from said control valve device to said brake cylinder device;

(d) sensor means for detecting the vehicle load condition, so as to connect the relayed brake cylinder delivery pressure to said proportional valve in parallel with said brake cylinder device in a first load condition of said vehicle and to interrupt said connection of said relayed brake cylinder delivery pressure to said proportional valve in a second load condition of said vehicle;

(e) said proportional valve means being operative in response to the relayed brake cylinder delivery pressure connected thereto in said first load condition for establishing a lower brake cylinder pressure than in said second load condition; and

(f) said sensor means comprising first and second load sensor valves connected in series such that, said relayed brake cylinder delivery pressure is connected to said proportional valve only when said first load condition is sensed concurrently by both said first and second load sensor valves.

4,583,791

CRAWLER VEHICLE UNDERCARRIAGE

Yoshihiro Nagata, Jyoyo; Kazuyuki Onohara, Hirakata; Koji Ukibe, Hirakata, and Toshio Kitani, Hirakata, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 12, 1984, Ser. No. 588,841
Int. Cl.[4] B65D *65/10*; B62D *55/16*
U.S. Cl. 305—27 **1 Claim**

1. An undercarriage for a crawler vehicle having a vehicle frame and a drive shaft, comprising:

a first cylindrical track frame pivotally mounted to said vehicle frame;

a second cylindrical track frame telescopically received within said first track frame;

an idler pivotally and rotatably mounted to one end of said second cylindrical track frame;

an idler cushion pad disposed between said second track frame and said idler;

a sprocket mounted to said drive shaft;

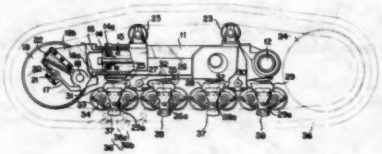
a track chain encompassing said idler and said sprocket and in driven engagement with said sprocket;

recoil means interposed between said first and second track frames for urging said idler away from said sprocket to maintain track tension;

a first crank member having a first and second end with the first end being pivotally mounted to said first track frame;

a second crank member having a first and second end with the first end being pivotally mounted to said first track frame, said second crank member sharing a common pivot axis with said first crank member;

roller means mounted to the second end of said first and



second crank members and in engagement with said track chain, each of said roller means comprising a bogie pivotally mounted to the second end of any one of said first and second crank members, and track rollers rotatably mounted to said bogie and engaging said track chain;

cushion pads interposed between said first track frame and said first and second crank members, respectively; and

said second end of each of said first and said second crank members each being bifurcated transversely with respect to said vehicle frame and having a first and second side wall;

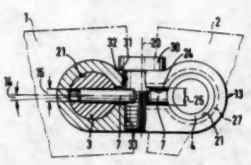
said undercarriage further comprises a first stop attached to each of said first side walls and extending downwardly therefrom and a second stop attached to each of said second side walls and extending downwardly therefrom, said first and second stops being disposed opposite said track chain for preventing said track chain from coming off said track rollers.

4,583,792

ASSEMBLING AID ON CRAWLER TRACK CHAINS

Günter Erlenmaier, Vellmar, and Klaus Spies, Remscheid, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Apr. 3, 1984, Ser. No. 596,285
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314685; Feb. 17, 1984, 3405699
Int. Cl.[4] B62D *55/20*
U.S. Cl. 305—42 **5 Claims**



1. In an arrangement forming an assembling aid on crawler chains for crawler track vehicles, including rubber-cushioned coupling pins for the chain link members; clamp-like connectors having slots therein, said connectors being slideable over

the ends of the coupling pins, and screws anchoring said connectors onto said coupling pins for interconnection of said chain link members; and securing elements engaging into said slots in the connectors in the assembled position of the coupled pins which are to be interconnected; the improvement comprising: said coupling pins being substantially circular in cross-section; said securing elements including adjusting elements being provided on each said coupling pin, said adjusting elements extending protuberance-like beyond the cross-section of said coupling pin into said slot, the adjusting elements having a lower height or diameter relative to the width of said slot in the clamped position of said connector; and guide surfaces being located on the connector for effectuating the preadjustment and final adjustment of the adjusting elements.

4,583,793

RECIRCULATING LINEAR ROLLER BEARING

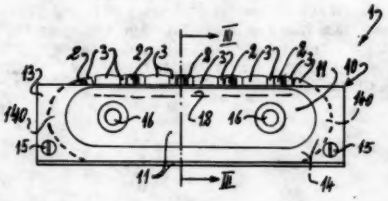
Albrecht Blatter, Roggwil, Switzerland, assignor to W. Schneeberger Maschinenfabrik AG, Roggwil, Switzerland

Filed Dec. 7, 1984, Ser. No. 679,584

Claims priority, application Switzerland, Dec. 21, 1983, 6807/83

Int. Cl.⁴ F16C *29/06, 19/50, 33/51*

U.S. Cl. 308—6 C **7 Claims**



1. A recirculating linear roller bearing, comprising:

a prismatically V-shaped bearing raceway;

said prismatically V-shaped bearing raceway comprising two raceway surfaces mutually defining an included angle of substantially 90°;

a prismatically V-shaped recirculation raceway cooperating with said prismatically V-shaped bearing raceway;

a housing including said prismatically V-shaped bearing raceway and said prismatically V-shaped recirculation raceway;

substantially cylindrical roller members serially arranged along said bearing raceway and said recirculation raceway;

each roller member of said substantially cylindrical roller members having a predetermined substantially cylindrical rolling surface;

said substantially cylindrical roller members rolling with said substantially cylindrical rolling surface between said prismatically V-shaped bearing raceway and an associated bearing rollway lying opposite said prismatically V-shaped bearing raceway in operation;

plastic bearing cage elements having end faces;

each cage element of said plastic bearing cage elements having apertures;

said rolling surface protruding through said apertures of an associated one of said plastic bearing cage elements;

each said roller member contacting said housing cnly with said rolling surface;

each said roller member being guided in said housing by said associated one of said plastic bearing cage elements;

each end face of said end faces of each cage element of said plastic bearing cage elements comprising two end surfaces oriented at more than 90° to one another;

a first end surface of said two end surfaces being oriented at least approximately at right angles to said prismatically V-shaped bearing raceway when the associated plastic bearing cage element is in said prismatically V-shaped bearing raceway;

said prismatically V-shaped recirculating raceway comprising a turning arc raceway portion;

a second end surface of said two end surfaces being oriented at least approximately radially to said turning arc raceway portion during a turning of said associated cage element in said turning arc raceway portion;

each said roller member being seated singly in an associated one of said plastic bearing cage elements; and

said plastic bearing cage elements being serially arranged in said prismatically V-shaped bearing raceway and said prismatically V-shaped recirculation raceway including said turning arc raceway portion with said end faces freely abutting.

4,583,794

ELECTROMAGNETIC BEARING

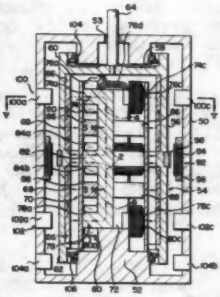
Kenichi Takahara, Tokyo, and Hajime Sudo, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 12, 1984, Ser. No. 660,215

Claims priority, application Japan, Feb. 3, 1984, 56-17794

Int. Cl.⁴ F16C *39/06*

U.S. Cl. 308—10 **9 Claims**



1. An electromagnetic bearing comprising:

magnetic supporting means including an elongated yoke, a plurality of magnetic poles protruding from the yoke in the direction substantially perpendicular to the longitudinal direction of the yoke, a plurality of coils for generating magnetic fluxes from the magnetic poles, and a magnetic field adjusting member formed of a magnetic material and disposed in the region for the passage of the magnetic fluxes produced from the magnetic poles; and

a supported body including a magnetic coupling member formed of a magnetic material, whereby the magnetic fluxes produced from the magnetic poles spread in the magnetic field adjusting member, and enter the magnetic coupling member through the magnetic field adjusting member.

4,583,795

CRASH CART FOR USE IN A HOSPITAL AND THE LIKE

Rollen E. Brown, and M. Sue Brown, both of 1378 S. Fairfax, Denver, Colo. 80222

Filed Jan. 3, 1984, Ser. No. 567,775

Int. Cl.⁴ A47B *81/00*

U.S. Cl. 312—209 **7 Claims**

1. A crash cart for use in storing equipment and drugs in a hospital and the like, the cart comprising:

a lower housing having caster wheels mounted on the bottom thereof, the lower housing having angular-shaped side panels therearound which may be opened for entrance into all sides of the housing, one or more of the side

panels being transparent for viewing the items stored therein and made of a flexible material which is lowered and rolled into a roll in the bottom of the housing for entrance into the housing;

an upper housing mounted on top of the lower housing, the upper housing having one or more transparent angular shaped side panels therearound for viewing items stored

therein, the side panels hinged to the bottom of the housing so the panels when opened may be lowered into a horizontal position for entrance into all sides of the housing and used as shelves for dispensing drugs or laying equipment thereon; and

a first flat horizontal rotatable shelf mounted on top of the upper housing, the shelf adapted for receiving equipment such as a defibrillator thereon.

4,583,796

INSULATED DOOR

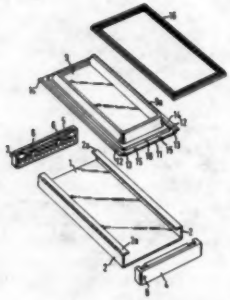
Noriaki Nakajima, Kyoto; Toshimasa Imaizumi, and Kazuhiro Anzai, both of Osaka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 25, 1983, Ser. No. 545,341

Claims priority, application Japan, Nov. 15, 1982, 57-173211[U]

Int. Cl.⁴ F25D *11/00*

U.S. Cl. 312—214 **18 Claims**



1. An insulated door comprising:

an outer panel including first and second edges opposing one another and third and fourth edges opposing one another, said first and second edges folded to form first and second sides, respectively, said first and second sides each including a portion extending from said outer panel, said first and second sides further including first and second return flanges, respectively, extending from said extending portions, said first and second return flanges each defining an inner surface facing and spaced a preset distance from said outer panel;

first and second end sections fitted to the third and fourth opposing edges of the outer panel;

an inner panel placed in relation to the outer panel so that first and second opposing inner panel edges are positioned inside the first and second sides of the outer panel in contact with said return flange inner surfaces and third and fourth opposing inner panel edges are positioned within the first and second end sections, said inner and outer panels defining a main cavity therebetween,

said inner panel including means defining a first arcuate lip in proximity to said inner panel first edge, an outer surface of said first lip contacting said first return flange inner surface along a first contact line, a first subsidiary cavity in communication with said main cavity being defined by the arcuate inner surface of said lip on the side of said first lip opposite said first contact line;

plural sets of first and second projection rib means, at least one set disposed in each of the end sections, for gripping the third and fourth edges of the inner panel which are positioned inside the end sections, said first and second rib means opposing one another and gripping an inner panel edge from opposite sides of said inner panel; and

insulating material disposed within said main cavity and said first subsidiary cavity.

4,583,797

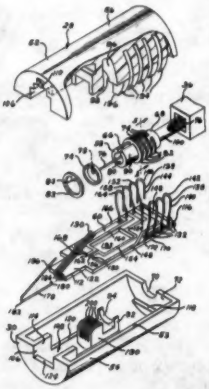
ROTATABLE ELECTRICAL CONNECTOR FOR COILED TELEPHONE CORD

Anthony R. Engelmore, 14001 Harbour Pl., and William H. Nold, 7829 Wolf Pen Branch Rd., both of Prospect, Ky. 40059

Filed Jun. 11, 1985, Ser. No. 743,500

Int. Cl.⁴ H01R *35/00*

U.S. Cl. 339—6 R **17 Claims**



1. A low friction rotatable electrical connector for use with a coiled telephone cord, said connector comprising:

a. a hollow insulated housing of generally cylindrical form that is split longitudinally into a base portion and a cover portion, and assembly means for holding the base and cover portions together, and a circular opening in at least one end wall of the cylindrical housing;

b. and a cylindrical rotor assembly of insulating material having a journal at one end that is rotatably mounted within the said circular opening so the rotor assembly may rotate freely relative to the hollow housing, the rotor assembly being a hollow cylindrical member having a single longitudinal split in the wall of the cylinder;

c. a plurality of continuous conductive rings mounted along the length of the rotor assembly and separated by a plurality of insulating washers, where there is a washer positioned between each adjacent pair of conductive rings to serve as a spacer between the rings, each conductive ring

including a separate insulated conductor on the underside thereof for extending through the longitudinal split of the rotor extending out from the rotor through the hollow journal to an external termination means;

d. a plurality of spring wire contact elements mounted within the said base portion of the housing in a parallel array, each spring wire contact element having a portion biased into continuous wiping contact with one of the said continuous conductive rings for making a reliable electrical connection between the relatively movable hollow housing and its rotor assembly;

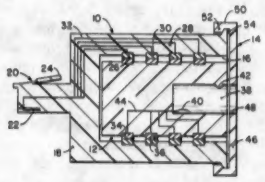
e. each of said plurality of spring wire contact elements being of hairpin shape, the said cover portion of the connector housing having a plurality of partitions to provide means to stabilize and space the contact elements apart.

4,583,798

ROTATABLE ELECTRICAL CONNECTOR

Daniel L. Blazowich, R.D. #1, Box 20, Westmoreland City, Pa. 15692

Filed May 20, 1985, Ser. No. 735,532
Int. Cl.[4] H01R *39/18*
U.S. Cl. 339—8 P **2 Claims**



1. A rotatable electrical connector for use with flexible cords to prevent twisting and kinking thereof comprising:

a. a shell of molded plastic material having a cylindrical side wall and an end wall together defining a cylindrical bore extending axially inwardly from one end thereof, a first electrical connector extending from said end wall and having a plurality of electrical contact members, an equal plurality of electrical contact elements carried by and projecting radially inwardly from said cylindrical wall, and an equal plurality of conductors each connecting one said contact member to one said contact element;

b. a barrel of molded plastic construction, of a diameter slightly less than that of said bore and having an equal plurality of electrical contact rings on the circumference thereof in alignment and engagement with said contact elements, a second electrical connector of complementary configuration to said first electrical connector extending inwardly from an end of said barrel and having an equal plurality of electrical contact members, and an equal plurality of conductors each connecting one of said last mentioned connectors to one of said rings;

c. means for rotatably retaining said barrel in said shell;

d. means for retaining said barrel comprises a retainer cap having a top wall partially overlying the end wall of said barrel, an annular side wall and a radially inwardly projecting flange connected to said side wall in spaced relation to said top wall, the cylindrical wall of said shell having a cooperating, radially outwardly projecting flange adjacent the open end of said shell; and

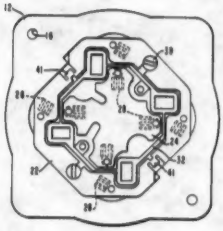
e. said shell includes an inner cylindrical member having an equal plurality of holes therethrough in alignment with said rings of said barrel, said contact elements comprising wire end portions projecting radially inwardly through said holes, and said shell further includes an outer cylindrical member closely overlying said inner member and biasing said wire ends radially inwardly.

4,583,799

MULTIPLE OUTLET RECEPTACLE

Roy O. Wiley, Huntington, Conn., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 17, 1983, Ser. No. 542,627
Int. Cl.[4] H01R *4/66*
U.S. Cl. 339—14 R **4 Claims**



1. A multiple outlet receptacle comprising:

a molded insulating body including a mounting flange and a housing portion integrally united;

said mounting flange laterally extending away from said housing portion and having fastener accommodating means therein for mounting the receptacle;

said housing portion having a front face and a back edge, said back edge being joined with said flange, with said front face located forward of said flange;

internal contact elements of a plurality of outlets located within said housing portion, said front face of said housing portion having plug blade receiving apertures for communicating with said internal contact elements;

a first group of said internal contact elements being attached to a first conductive plate configured as an apertured ring and a second group of said internal contact elements being attached to a second conductive plate that is disposed within said aperture of said first conductive plate in a common plane each of said first and second conductive plates resting on insulating supports within said housing portion with said internal contact elements extending frontwardly therefrom in spaces between said insulating supports and an insulating barrier extends between said first and second conductive plates, said insulating supports and said insulating barrier being integral with said housing portion;

a rear closing plate of insulating material configured to fit within said back edge of said housing portion substantially flush with said flange;

a third group of said internal contact elements being attached to a third conductive plate that is located on the outside, rearward, surface of said closing plate and said third group of said internal contact elements extending through apertures within said closing plate;

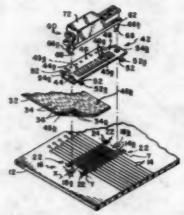
terminal means for wire connections to said internal contact elements and accessible on the rear surface of said closing plate; and,

said internal contact elements and said plug blade receiving apertures for communicating therewith being arranged in a pattern so each outlet can receive a plug of like configuration and a cord attached to each such plug can extend laterally away from said housing portion substantially parallel to said front face without interference among the plugs and their cords.

4,583,800
SELF-ALIGNING ELECTRICAL CONNECTION ASSEMBLY

Joseph A. Roberts, Hudson, and Thomas H. Stearns, Nashua, both of N.H., assignors to Advanced Circuit Technology, Inc., Nashua, N.H.

Filed Aug. 20, 1984, Ser. No. 642,202
Int. Cl.[4] H01R 9/09
U.S. Cl. 339—17 F **15 Claims**



1. An electrical connection assembly comprising

A. a first circuit having a generally flat contact area containing a plurality of exposed contacts;

B. a second circuit having a generally flat contact area containing a plurality of exposed contacts, the contacts of the two circuits being arranged and adapted so that the two circuit contact areas can be juxtaposed with at least some of the contacts of the two circuits being in face-to-face engagement and one of said circuits comprising an insulating substrate whose said contacts are printed on said substrate;

C. guide means affixed to said one circuit adjacent its said contact area, said guide means comprising raised areas printed on the substrate;

D. flexible alignment means affixed to the other circuit, said alignment means

(1) being positioned adjacent to said guide means when the two circuits are juxtaposed with their engaging contacts in gross registration, and

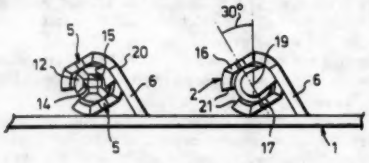
(2) flexing when the two circuit contact areas are clamped together so that the alignment means engage said guide means and are shifted thereby in a direction that brings said engaging contacts into fine registration; and

E. means for clamping the two circuit contact areas together so that said some contacts of the two circuits are maintained in face-to-face engagement.

4,583,801
CIRCUIT BOARD COMPOSITE CONNECTORS

Cyril J. White, Chandlers Ford, and Christopher Joyce, Southampton, both of England, assignors to BICC public limited company, London, England

Filed Nov. 4, 1983, Ser. No. 548,738
Claims priority, application United Kingdom, Nov. 5, 1982, 8231714
Int. Cl.[4] H01R 4/24, 43/20, 13/187
U.S. Cl. 339—17 C **10 Claims**



1. For use with circuit boards of the kind comprising a board of electrically insulating material, a regular pattern of strips of electrically conductive metal or metal alloy bonded on one surface of the board and, extending through the board and the overlying electrically conductive metal strips, a multiplicity of holes distributed at spaced positions along the strips, a bandoleer of composite connectors comprising an elongate strip of electrically conductive sheet metal or metal alloy having integral with and at spaced positions along at least one of its longitudinally extending edges a multiplicity of composite connectors extending laterally from the strip, each of which composite connectors is formed from a preform of said sheet metal or metal alloy shaped to form, at that end of the composite connector remote from said longitudinally extending edge, a socket which will make a fit in a hole in a circuit board and in which a terminal pin of a circuit component can be resiliently gripped and, at that end of the composite connector integral with said longitudinally extending edge, a tubular end portion of substantially circular cross-section including two bifurcated contacts which are at substantially diametrically opposed positions with the slots bounded by the limbs of the bifurcated contacts opening into said end of the composite connector and which are of such a form that when a length of insulated wire is introduced between the limbs of the bifurcated contacts, the limbs will displace the insulating covering of the wire to effect an electrical connection with the wire at at least two positions spaced along its length, the tubular end portion of each composite connector being joined to said longitudinally extending edge of the strip by a fracturable link so folded out of the plane of the elongate strip that each of the fracturable link and the common axis of the slots bounded by the limbs of the bifurcated contacts lies at an acute angle to the longitudinal axis of the strip, which acute angle is such that, when composite connectors are fitted into adjacent holes in a circuit board, the positions of the bifurcated contacts of each composite connector are such that a length of insulated conductor introduced between the limbs of the bifurcated contacts of the composite connector will extend between neighbouring composite connectors with negligible risk of rendering difficult connection of a length of insulated conductor to a neighbouring composite connector.

4,583,802
DECORATION BOARD FOR ELECTRIC WIRE LAID

Jen F. Hwang, 25-1, Alley 4, Lane 133, Sec. 4, Nanking East Rd., Taipei, Taiwan

Filed Feb. 10, 1984, Ser. No. 578,852
Int. Cl.[4] H01R 9/00, 9/16
U.S. Cl. 339—20 **5 Claims**

1. An indoor decoration board for concealing electric wire laid along a wall of a room, each section of said board comprising a wire-laying board which is a thin and long flat board having upper and lower portions provided with curving flanges, and a plurality of spaced wire-laying grooves extending in an area between said upper and lower portions, an engaging board which is a long saw-tooth shaped board having upper and lower portions furnished with soft sealing strips, one of which projects inwardly and the other outwardly of the wire-laying board, said strips being integrally formed with said

engaging board, the upper and lower portions of said engaging board also being provided with curved flanges, said engaging board having an exterior surface provided with elongated spaced saw-teeth disposed between said upper and lower portions, said engaging board having an inner surface provided with a plurality of elongated spaced wire-laying grooves which, in conjunction with the wire-laying grooves in the wire-laying board, define a corresponding plurality of conduits for receiving electric wires, a number of tucked nail grooves disposed underneath the saw-teeth for accommodating fastening means, said fastening means projecting through said engaging board and said wire-laying board so as to secure said decoration board to said wall, and joint means for connecting together abutting ends of said sections.

4,583,803

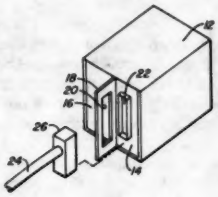
ELECTRIC MODULE WITH FAIL-SAFE POWER DISCONNECT

Martin C. Bringuel, San Jose, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Filed Feb. 15, 1985, Ser. No. 702,185

Int. Cl.[4] H01R *13/62*

U.S. Cl. 339—45 M **3 Claims**



1. A connection system for a host system including a plug-in electronic module and a power supply cable for plug-in connection to said module, said system comprising:

said host system including a housing for said module effectively precluding access to said module except at one exterior end thereof,

said module including an end plate at said exterior end, said end plate including handle means facilitating removal of said module from said housing,

said module end plate further comprising power supply cable jack means for mating with a plug of said power supply cable,

said jack means and said plug being so located and adapted to render ineffective said handle means when said plug is mated with said jack, thereby requiring service personnel to remove said power supply plug from said jack means before removing said module from said housing.

4,583,804

ELECTRIC FEEDTHROUGH SYSTEM

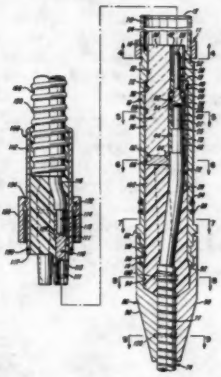
Richard Thompson, 6007 Craigway, Spring, Tex. 77389

Filed May 21, 1984, Ser. No. 612,407

Int. Cl.[4] H01R *13/516*

U.S. Cl. 339—60 M **25 Claims**

1. An electric feedthrough unit particularly applicable to a wellhead to interconnect an aboveground source of power with underground equipment comprising a generally tubular structure of steel or other material having like properties of strength and resistance to distortion, a rigid body of an insulating material having a high dielectric strength, such as alumina ceramic, positioned within said tubular structure at a location intermediately of and spaced from its respective ends, one of said ends constituting an upper end and the other a lower end when said electric feedthrough unit is applied to a wellhead for use, electrically conductive elements contained within and in recessed relation to the outer surface of said rigid body, said tubular structure having an inner wall surface including thereon means defining an annular shoulder which extends transversely of said tubular structure and is spaced from its ends, one end portion of said body being in a directly abutted relation to said shoulder which precludes said body from movement toward said upper end of said tubular structure, said body having an outer peripheral surface portion thereof in a contacting bearing relation to said inner wall surface of said tubular structure, a length of armored cable having sheathed conductive wires contained therein and extending the length thereof, at one end portion of said cable said contained wires being exposed, their respective extremities bared and each respectively connected in an electrically conductive relation to one of said elements, said cable extending from said elements and said rigid body through and from said lower end of said tubular structure, the opposite end portion of said cable being adapted for connection of said wires to deliver power to underground equipment, closure means clamped to and about said



tubular structure and said cable adjacent said lower end of said tubular structure to form a chamber located between said rigid body and said closure means, said chamber being charged and filled with a flexible dielectric material, such as an epoxy which is flexible when cured, said flexible dielectric complementing and being shaped by an interior surface of said closure means and forming a seal within and across said lower end portion of said tubular structure, about and in supporting relation to the portions of said cable therein, precluding the entry to the lower end of said tubular structure and passage therethrough of fluids and operative to receive and transmit to and through said rigid body to said shoulder such forces, stresses and strains as are applied thereto, directly or indirectly, when exposed to an environment of high temperatures and pressures and highly volatile or otherwise dangerous fluid, thereby to obviate chance occurrence of dangerous and catastrophic events in use of said electric feedthrough unit.

4,583,805

LOCKING ARRANGEMENT FOR ELECTRICAL CONTACT ELEMENT INSERTABLE INTO HOUSING CHAMBER

Konrad Mantlik, Wuppertal, Fed. Rep. of Germany, assignor to Grote & Hartmann GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 547,052

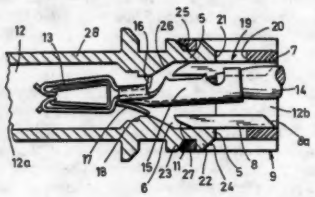
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3247022

Int. Cl.[4] H01R *11/22*

U.S. Cl. 339—61 R **9 Claims**

1. A locking arrangement for an electrical connector insertable into a housing chamber having walls, the locking arrangement comprising a plurality of first arresting elements arranged outwardly on the walls of the housing chamber; and a locking

mount fittable onto the walls of the housing chamber and provided with a plurality of locking elements arranged for locking the electrical connector and with a plurality of second arresting elements cooperating with the first arresting elements of the walls of the housing chamber, said locking mount in-



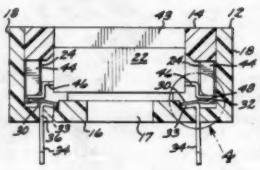
cluding a frame having a plurality of frame walls provided with said locking elements and said second arresting elements, said locking elements including at least one pin-shaped stopper arranged on one of said frame walls, and extending normally downwardly beyond said one frame wall.

4,583,806

LOW INSERTION-FORCE SOCKET FOR IC DEVICE

Leland B. Tainter, Jr.; Edward J. Goeppinger; William H. King, all of Riverside, and Ronald E. Smith, Sunnymead, all of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Jan. 11, 1985, Ser. No. 690,566
Int. Cl.[4] H01R *13/631*
U.S. Cl. 339—75 MP **28 Claims**



1. A socket for an integrated circuit device having a body with leads extending from at least one side thereof, said socket comprising:

a receptacle including a base and a pair of substantially vertical side walls extending upwardly from opposite sides of said base, said receptacle being dimensioned to receive said device;

means forming a row of spaced-apart vertical slots extending upwardly from said base adjacent the interior surface of at least one of said side walls, said slots being dimensioned and spaced so that each of said leads is received separately in one of said slots when said device is received in said receptacle, said slot forming means comprising a row of substantially vertical guide members extending inwardly from said interior side wall surface and upwardly from said base at least partway up said side wall, said slots being defined between adjacent ones of said guide members;

an electrical contact in each of said slots; and

a cover for said receptacle having a plurality of fingers extending downwardly therefrom, each of said fingers being registrable with, and receivable in, one of said slots;

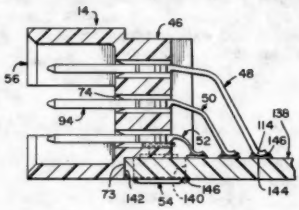
whereby when said device is received in said receptacle with its leads each received in one of said slots, and said cover is placed on said receptacle with its fingers each received in one of said slots, each of said leads is engaged between one of said fingers and one of said contacts in one of said slots.

4,583,807

SURFACE MOUNT CONNECTOR

John W. Kaufman, Hershey, and Douglas C. Rubendall, Millersburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 561,099, Dec. 13, 1983. This application Aug. 7, 1985, Ser. No. 763,178
Int. Cl.[4] H01R *9/09*
U.S. Cl. 339—125 R **7 Claims**



1. An electrical connector for mounting on a printed circuit board, comprising:

a dielectric housing having first, second and third parallel rows of passages extending from a front surface to a rear surface thereof, said first row of passages being adjacent a top surface of said housing, said second row of passages being immediately below said first row and said third row of passages being adjacent a bottom surface of said housing;

a plurality of electrical contacts disposed in respective passages of said first, second and third rows, said contacts including post sections intermediate sections and tail sections, said post sections extending forwardly from said front surface of the housing, said intermediate sections retained in said passages and said tail sections extending rearwardly and downwardly from said rear surface of said housing and being disposed in first, second and third rows with the first row furthest from said housing, the third row closest to said housing and the second row in between said first and third rows, said tail sections having convex shaped free ends for soldered connection with respective conductive pads on a printed circuit board; and

securing means provided by said housing for securing the electrical connection onto the printed circuit board so as to position said convex shaped free ends on said respective conductive pads,

wherein the thicknesses of the tail sections vary according to the rows with those disposed in the first row being thickest, those disposed in the third row being thinnest and those disposed in the second row being of an intermediate thickness.

4,583,808

CONFIGURABLE MULTIPLE CONNECTOR PANEL

Warren W. Porter, Escondido, and Louis W. Thies, La Jolla, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 5, 1985, Ser. No. 708,460
Int. Cl.[4] H01R *13/74*
U.S. Cl. 339—126 R **6 Claims**

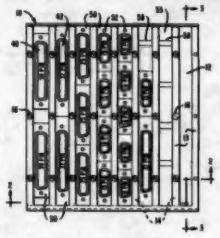
1. A multiple connector panel comprising:

a back panel, formed of electrically conductive material, having a plurality of longitudinal openings defined there thru for receiving electrical connectors;

a mounting flange adapted for afixing to an electrical connector for permiting said electrical connector to be positioned in a longitudinal opening with the mounting flange abutting said back panel;

clamping bars having a length corresponding to the longitudinal openings in said back panel, and longitudinal re-

cessed portions extending along opposite sides of said bars for receiving an edge portion of said mounting flange; and



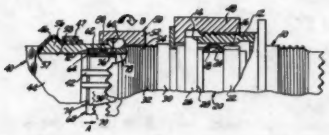
means for fastening said clamping bars to said back panels adjacent each longitudinal opening to secure mounting flanges to said back panel.

4,583,809

ELECTRICAL CONNECTOR ASSEMBLY HAVING MEANS FOR EMI SHIELDING

Dee A. Werth, Bainbridge; Robert W. Brush, Sr., Unadilla, and Paul I. Pressel, Vestal, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 2, 1984, Ser. No. 595,879
Int. Cl.⁴ H01R *13/658, 17/18*
U.S. Cl. 339—143 R **6 Claims**



6. An electrical connector assembly comprising an electrically conductive shell including a generally cylindrical back shell having a plurality of teeth extending aftwardly therefrom, a conductor having a conductive braid therearound and having an end portion extending into said backshell, and means for providing a continuous 360° electrically conductive seal between said backshell and said braid whereby to shield the conductor against electro-magnetic interference, including a ferrule of electrically conductive material in electrical circuit relation to said braid, a sleeve of electrically conductive material surrounding said conductor and in electrical circuit relation to the back shell and to said ferrule, and an annular flange of relatively soft malleable material which is plastically deformed axially between said back shell and said sleeve.

4,583,810

HERMETICALLY SEALED FILTER CONNECTOR

Edward R. Gliha, Jr., Bainbridge, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 14, 1984, Ser. No. 610,070
Int. Cl.⁴ H03H *7/00*
U.S. Cl. 339—147 R **10 Claims**

1. In combination with a hermetically sealed filter connector of the type having a metal shell; at least one electrical contact; means mounting each of said at least one contacts in said metal shell, including a hermetic seal between the shell and each of said at least one contacts; and means for electrically filtering unwanted signals from at least one of said at least one contacts, the improvement wherein said filtering means comprises:

a housing, having at least one passage through which a respective one of said at least one contacts passes;

a capacitive circuit element for each passage in said housing, each capacitive element mounted in said housing and having a passage through which a respective one of said at least one contacts passes; and

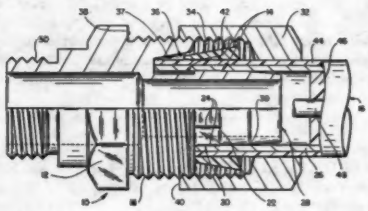
means removably mounted said housing to said metal shell and for electrically connecting one terminal of each capacitive element in electrical connection with said metal shell and the other terminal of each capacitive element in electrical connection with a respective one of said at least one contacts.

4,583,811

MECHANICAL COUPLING ASSEMBLY FOR A COAXIAL CABLE AND METHOD OF USING SAME

Corey J. McMills, Los Altos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 480,052, Mar. 29, 1983, abandoned. This application Mar. 29, 1984, Ser. No. 594,628
Int. Cl.⁴ H01R *17/04*
U.S. Cl. 339—177 R **15 Claims**



1. A connector for a coaxial cable having a center conductor and a substantially cylindrical outer layer surrounding the center conductor, comprising:

a deformable compressive member;

a connector body integrally formed of one piece of material and having a mating area disposed in contact with an outer layer of the coaxial cable, the connector body including means for focusing deformation of the compressive member, the mating area extending within the outer layer, the focusing means outwardly surrounding the outer layer and the deformable compressive member; and

a driver member for compressing the deformable compressive member against the focusing means so as to compress at least part of the outer layer against the mating area.

4,583,812

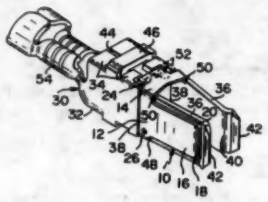
ELECTRICAL CONTACT WITH ASSIST SPRING

Robert E. Gross, Jr., Elizabethtown; Teresa K. Heck, New Cumberland, both of Pa.; William P. Sturner, Cherry Hill, N.J., and Yew-Thye Yeow, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 29, 1984, Ser. No. 625,998
Int. Cl.⁴ H01R *13/18*
U.S. Cl. 339—259 R **15 Claims**

1. An assist spring for an electrical receptacle contact, said receptacle contact having opposing contact arms spaced therebetween extending forwardly from a body portion thereof for

electrical engagement with a plug terminal insertable therebetween, said assist spring being stiff and comprising opposing resilient cantilever spring arms extending forward from parallel base sections in spaced apart relationship, said base sections being interconnected by an integral bridge section therebetween, said assist spring being secured around said receptacle contact by having said base sections disposed along outside surfaces of respective said contact arms proximate said body portion and each said base section having an inwardly extending projection to engage a respective said outside surface to space said base section from said respective contact arm, said bridge section straddling said contact arms proximate said



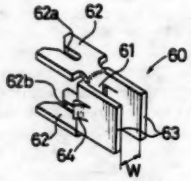
body portion, and said spring arms extending along and proximate to outside surfaces of said contact arms, each spring arm having a support area near a forward end thereof for its associated said contact arm to be brought into engagement therewith upon said contact arms being urged more widely apart by a said plug terminal being inserted between said contact arms, said support areas being substantially unrestrained against relative axial movement along said outside surfaces of said contact arms, whereat and whereupon said spring arms substantially resist said widening of said contact arms thereby providing greater contact force between said contact arms and said plug terminal, solely by reason of said resilient cantilever spring arms.

4,583,813

LOW PROFILE ELECTRICAL CONNECTOR ASSEMBLY

Hiromi Yamada, Yokosuka, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 651,549, Sep. 17, 1984, which is a continuation of Ser. No. 341,954, Jan. 22, 1982, Pat. No. 4,474,418. This application Oct. 26, 1984, Ser. No. 665,326
Claims priority, application Japan, Nov. 16, 1983, 58-214175
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 339—91 R **8 Claims**



1. An electrical connector, comprising:

a first insulating housing member having a supporting-rib member extending outwardly from an upper surface of said first housing member in a mating direction, a first electrical contact member secured in said first housing and including a contact section in the form of a resilient hook member disposed about said supporting-rib member; and

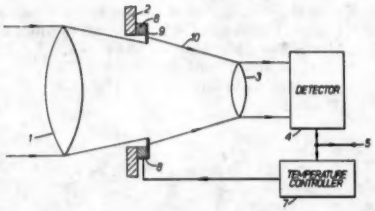
a second insulating housing member matable with said first housing member, a second electrical contact member secured in said second housing member, said second contact member includes a base plate extending parallel to the mating direction and having a conductor-connecting portion and a contact portion, said conductor-connecting portion extending to one side of said base plate for electrical connection to an electrical conductor so that the electrical conductor extends in the same direction as the mating direction and said contact portion extending to the other side of said base plate opposite the direction of said conductor-connecting portion and defining parallel contact arms that have contact surfaces extending in the same direction as the mating direction and which mechanically engage respective surfaces of said resilient hook member therealong in an interference fit thereby electrically connecting the first electrical contact member with the second electrical contact member when the first and second housing members are mated.

4,583,814

INFRA-RED OPTICAL SYSTEMS

Adrian H. Koetser, Brentwood, England, assignor to GEC Avionics Limited, Rochester, England

Filed Jul. 13, 1984, Ser. No. 630,785
Int. Cl.⁴ G02B *23/00*; G01K *1/20*
U.S. Cl. 350—1.2 **7 Claims**



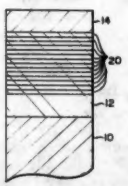
1. An infra-red optical system including optical means for imaging a field of view onto a thermal sensor, the perimeter of the field of view being defined by an aperture stop located within the system and at least part of which is within said field of view; and means for controlling the temperature of the aperture stop in dependence on the temperature of the field of view.

4,583,815

HEAT WAVE SHIELDING LAMINATION

Yasunori Taga, and Yutaka Sawada, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jun. 30, 1983, Ser. No. 509,964
Claims priority, application Japan, Jul. 6, 1982, 57-117482
Int. Cl.⁴ G02B *5/22*; H05B *3/06*
U.S. Cl. 350—1.6 **18 Claims**



1. A heat wave shielding lamination comprising a visible light transparent substrate and an overlying lamination comprising two In_2O_3 shield layers containing different amounts of Sn, the amount of Sn increasing with increasing proximity to the substrate, whereby the resulting heat wave shielding lami-

nation has good transmittance for visible light and good shielding effect against rays in the infrared spectrum by virtue of the fact that the shield layers containing different amounts of Sn manifest maximum infrared absorption at different wavelengths to give high infrared ray absorptioon over a wide wavelength range.

4,583,816

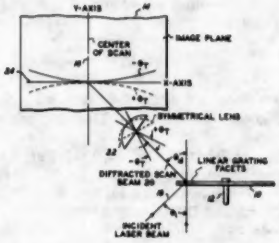
PREOBJECTIVE HOLOGON SCANNER SYSTEM

Charles J. Kramer, Pittsford, N.Y., assignor to Holotek Ltd., Rochester, N.Y.

Filed Jul. 27, 1984, Ser. No. 635,073

Int. Cl.[4] G02B *26/10*

U.S. Cl. 350—3.71 **14 Claims**



1. A preobjective hologon scanner comprising a hologon spinner containing at least one diffraction grating facet which diffracts an optical beam incident thereon, means for rotating said spinner so that the diffracted optical beam is scanned across an image plane, a focusing lens between the hologon spinner and the image plane, said focusing lens having distortion for changing the velocity of the scan of said diffracted beam along said image plane, and said focusing lens having its optical axis tilted with respect to the diffracted beam so as to correct for bow of said scan line.

4,583,817

NON-LINEAR INTEGRATED OPTICAL COUPLER AND PARAMETRIC OSCILLATOR INCORPORATING SUCH A COUPLER

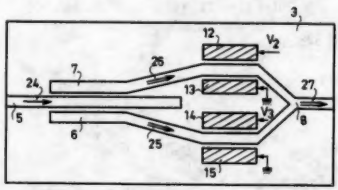
Michel Papuchon, Issy les Moulineaux, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 27, 1983, Ser. No. 536,441

Claims priority, application France, Sep. 28, 1982, 82 16297

Int. Cl.[4] G02B *6/10*

U.S. Cl. 350—96.14 **12 Claims**



1. A non-linear integrated optical coupler comprising a plane subtrate, having an input face and an output face, made from a non-linear electro-optical material, and at least two waveguides, disposed on the surface of said substrate, each of said waveguides being parallel to one another over a predetermined length and separated by a distance such that the incident wave radiation can be transferred from one guide to the other, wherein a first of said at least two waveguides comprises an ion exchanged layer of H^+ ions in the substrate and a second of said at least two waveguides comprises a layer of diffused titanium in the substrate.

4,583,818

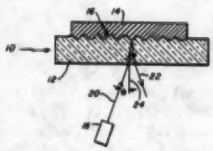
OPTICAL DEVICE WITH SURFACE PLASMONS

Yung-Jui Chen, Weston; Gary M. Carter, Lexington, and William H. McNeill, Carlisle, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 8, 1983, Ser. No. 521,512

Int. Cl.[4] G02B *6/34*

U.S. Cl. 350—96.19 **15 Claims**



1. In combination an optical bistable device comprising

a non-linear dielectric layer, and

a metal layer in communication with said dielectric layer, forming an interface between said metal layer and said non-linear dielectric layer, said interface including a submicron grating; and

means for optically exciting said device from a light source of given intensity.

4,583,819

OPTICAL FIBRE CONNECTOR USING SINGLE RESILIENT ACTUATING ELEMENT

Paul G. Duesbury, Solihull, England, assignor to Lucas Industries, plc, Birmingham, England

Filed Aug. 4, 1982, Ser. No. 405,109

Claims priority, application United Kingdom, Aug. 18, 1981, 8125121

Int. Cl.[4] G02B *6/38*

U.S. Cl. 350—96.21 **14 Claims**

1. An optical fibre connector comprising a first member composed of a rigid material and formed in one surface thereof with an elongated groove for axially receiving respective end portions of a pair of optical fibres to be interconnected, a second member substantially identical with the first member and engageable therewith such that said grooves are in registration and can locate therebetween the end portions of said pair of fibres, with the end portion of each fibre being fixed relative to a respective one of the members, and a resilient element which, when said first and second members are inter-

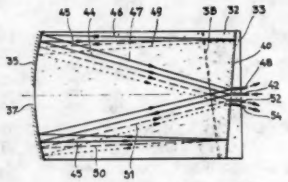
engaged, co-operates with said first and second members, one end of the resilient element being anchored relative to the first member at a position between the free end of the end portion of one of the fibres and the point at which said one fibre projects from the first member, while the other end of the resilient element is anchored relative to the second member at a position between the free end of the end portion of the other fibre and the point at which said other fibre projects from the second member, the resilient element being stressed when co-operating with said interengaged first and second members and being arranged so as thereby to impart to the first and second members a force having a first component in a direction urging said one surfaces together, and a second component in a direction parallel with the axes of the fibres so as to apply a sliding force to the members.

4,583,820

WAVELENGTH MULTIPLEXER/DEMULTIPLEXER USING OPTICAL FIBERS

Jean Flamand, Chatenay Malabry; Philippe Gacoin, Gif s/Yvette, and Jean-Pierre Laude, St Cyr la Riviere, all of France, assignors to Instruments S.A., Paris, France

Continuation-in-part of Ser. No. 247,440, Mar. 25, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,481
Claims priority, application France, Dec. 24, 1981, 81 24211
Int. Cl.⁴ G02B *6/34*
U.S. Cl. 350—96.19 **11 Claims**



1. A multiplexer-demultiplexer comprising:

(a) a solid transparent member having a length and defining first and second ends, said first end being configured and dimensioned to form a support for a focusing surface;

(b) first reflective means, adjacent said first end, for forming a reflective focusing surface;

(c) second reflective means adjacent said second end for forming a reflective surface;

(d) first light conducting means for sending or receiving light, said first light conducting means being positioned proximate said second end and positioned at a first end of a multi-branch path along which light is sent or received, said path extending from said first light conducting means toward said reflective focusing surface;

(e) color selective reflective means positioned in said solid transparent member between said first end of said solid transparent member and said second reflective means for passing light of a first wavelength, and positioned proximate to said first light conducting means and configured for reflecting light of an other wavelength along a path different from that followed by light of said first wavelength, said color selective reflective means being planar in shape, and defining a central open portion which passes light of said first and other wavelengths;

(f) second light conducting means for receiving or sending light of said other wavelength which is sent or receiving, respectively, by said first light conducting means, said second light conducting means being positioned proximate said second end and positioned at a first opposite path end of a first branching path, said first branching path extending from said first light conducting means through said open portion to said first reflective means, from said first reflective means to said color selective reflective means, from said color selective reflective means to said first reflective means and from said first reflective means through said open portion to said second light conducting means and proceeding in directions defined by rays of light of said other wavelength, travelling between said first light conducting means and said second light conducting means; and

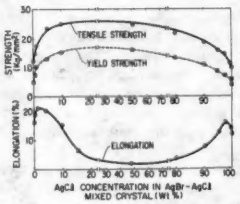
(g) third light conducting means positioned proximate said second end and positioned at a second opposite path end of a second branching path, said second branching path extending from said first light conducting means to said first reflective means, from said first reflective means, through said color selective reflective means, to said second reflective means, from said second reflective means, through said color selective reflective means, to said first reflective means, and from said first reflective means to said third light conducting means, and proceeding in directions defined by rays of light of said first wavelength travelling between said first and third light conducting means.

4,583,821

INFRARED FIBERS

Kazuhito Murakami, and Kenichi Takahashi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 436,688, Oct. 26, 1982, Pat. No. 4,490,008. This application Sep. 14, 1984, Ser. No. 651,031
Claims priority, application Japan, Nov. 9, 1981, 56-178399
Int. Cl.⁴ D02G *3/00*; G02B *5/14*
U.S. Cl. 350—96.34 **8 Claims**



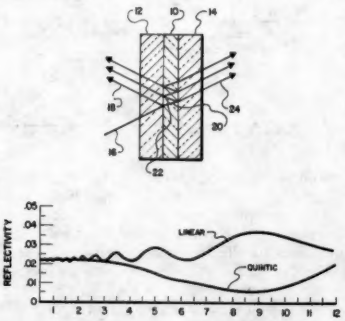
1. An infrared fiber comprising a crystalline fiber consisting of a mixed crystal containing 0.01 to 10% by weight of silver chloride in silver bromide or a mixed crystal containing 0.01 to 10% by weight of silver bromide in silver chloride, and a tubular protective layer of plastic or rubber provided around the crystalline fiber.

4,583,822

QUINTIC REFRACTIVE INDEX PROFILE ANTIREFLECTION COATINGS

William H. Southwell, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 31, 1984, Ser. No. 666,799
Int. Cl.⁴ B05D *5/06*; G02B *1/10*
U.S. Cl. 350—164 **10 Claims**



1. An antireflective optical film for placement between an

incident medium and a substrate to effect minimal reflectivity from the incident-substrate interface over a broad spectral band, comprising:

a film having an approximately quintic refractive index profile with an initial refractive index n_L as close as possible to the refractive index of the incident medium and a final refractive index n_H substantially equal to the refractive index of the substrate.

4,583,823

DEVICE FOR FOCUSSING LENS

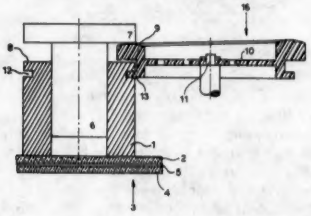
Andrzej Walczak, Ober-Morlen, Fed. Rep. of Germany, assignor to MAP Mikrofilm Apparatebau Dr. Poehler GmbH & Co KG, Fed. Rep. of Germany

Filed Jun. 7, 1984, Ser. No. 618,137

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3329003

Int. Cl.[4] G02B 7/04

U.S. Cl. 350—255 9 Claims



1. A device for focussing a lens held in a lens holder having a collar at one end thereof, with the lens holder being axially movable in a lens sleeve supported on a film holder on which the lens sleeve can slide, said device comprising:

a. a focussing wheel pivotable about an axis parallel to the axis of the lens sleeve, part of the exterior faces of said focusing wheel being accommodated in a space between the lens sleeve and the collar of the lens holder,

b. the thickness of said focussing wheel varying along its periphery,

c. said focussing wheel being axially deformable.

4,583,824

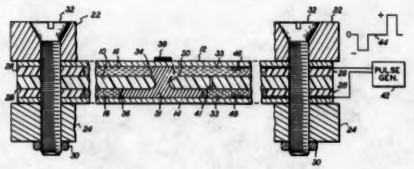
ELECTROCAPILLARY DEVICES

Michael C. Lea, Rochester, N.Y., assignor to University of Rochester, Rochester, N.Y.

Filed Oct. 10, 1984, Ser. No. 659,386

Int. Cl.[4] G02B 26/02

U.S. Cl. 350—267 25 Claims



1. A bistable device which comprises a housing defining a pair of fluid reservoirs, a capillary communicating said reservoirs with each other, first and second immisible fluids in said housing defining first and second interfaces, said first fluid being disposed in at least one of the reservoirs and being flowable between the reservoirs through said capillary between first and second stable positions in response to the pressure differences across the interfaces, said interfacial pressures being balanced in said first and second positions, and means for changing the interfacial tension between said fluids to switch the position of the first fluid between said first stable position and said second stable position.

4,583,825

ELECTRO-OPTIC DISPLAY SYSTEM WITH IMPROVED VIEWING ANGLE

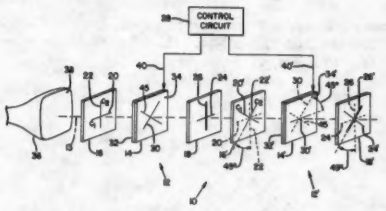
Thomas S. Buzak, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 27, 1983, Ser. No. 565,442

The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.

Int. Cl.[4] G02F 1/133

U.S. Cl. 350—335 12 Claims



1. In an optical switching system in optical communication with a source of light and comprising a first light gate which includes an electro-optic device means and a linear polarizing filter means with orthogonally aligned polarization axes and which provides an optical transmission state having associated therewith a contaminant light intensity pattern with points of local minima and maxima, a contaminant intensity compensation method comprising:

positioning a second light gate to receive the light transmitted through the output of the first light gate, the second light gate including an electro-optic device means and a linear polarizing filter means with orthogonally aligned polarization axes and providing an optical transmission state having associated therewith a contaminant intensity pattern with points of local minima and maxima; and

orienting the contaminant light intensity patterns of the first and second light gates so that the points of local minima and maxima of the contaminant light intensity pattern of one of the light gates generally align with the respective points of local maxima and minima of the contaminant light intensity pattern of the other light gate and that the polarization axes of the linear polarizing filter means of one of the light gates are disposed at an angle relative to the polarization axes of the linear polarizing filter means of the other light gate, thereby to provide independent of viewing angle a system optical transmission state of substantially contaminant-free light.

4,583,826

PHENYLETHANES

Martin Petrzilka, Kaiseraugst, and Martin Schadt, Seltisberg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

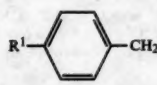
Filed Oct. 1, 1982, Ser. No. 432,212

Claims priority, application Switzerland, Oct. 19, 1981, 6572/81; Mar. 19, 1982, 1725/82; Jul. 8, 1982, 4172/82

Int. Cl.[4] C09K 3/34; G02F 1/13; C07C 1/26, 5/03, 13/28, 2/86

U.S. Cl. 350—350 R 17 Claims

1. A compound of the formula



wherein R^1 is trans-4-alkylcyclohexyl, 4'-alkyl-4-biphenylyl, p-(trans-4-alkylcyclohexyl)phenyl, 2-(trans-4-alkylcyclohexyl)ethyl or p-[2-(trans-4-alkylcyclohexyl)ethyl]phenyl and R^2 is trans-4-alkylcyclohexyl; or R^1 is trans-4-alkylcyclohexyl and R^2 is p-(trans-4-alkylcyclohexyl)phenyl, p-[2-(trans-4-alkylcyclohexyl)ethyl]phenyl or 4'-

(trans-4-alkylcyclohexyl)-4-biphenylyl; or R^1 is p-alkylphenyl and R^2 is p-[2-(trans-4-alkylcyclohexyl)ethyl]phenyl, and the alkyl groups in the substituents R^1 and R^2 are straight-chain groups of 1 to 7 carbon atoms.

4,583,827

OPTICAL LENS MOVING MECHANISM

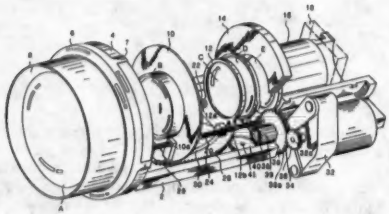
Tomokazu Tokunaga; Jirou Kajino, both of Neyagawa, and Masataka Izaki, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 7, 1983, Ser. No. 559,027

Claims priority, application Japan, Dec. 7, 1982, 57-214908; Mar. 25, 1983, 58-51250; Mar. 25, 1983, 58-51249; Apr. 15, 1983, 58-65693; Apr. 15, 1983, 58-65694

Int. Cl.⁴ G02B 7/10

U.S. Cl. 350—429 **22 Claims**



1. An optical lens moving mechanism for zoom lens systems comprising:

a lens system including at least a first lens group and a second lens group and having an optical axis;

first lens holding means for holding said first lens group and being movable along said optical axis;

second lens holding means for holding said second lens group and being movable along said optical axis;

guide means for slidably mounting said first and second lens holding means so that said first and second lens holding means are movable along said optical axis;

a rotating member, provided on a rotational axis perpendicular to but spaced from said optical axis, provided with a first cam and a second cam;

said first cam being connected with a first cam follower, mounted on said first lens holding means, and moving said first cam follower in the radial direction with respect to the rotational axis of said rotating member; and

said second cam being connected with a second cam follower, mounted on said second lens holding means, and moving said second cam follower in the circumferential direction with respect to the rotational axis of said rotating member.

4,583,828

FOCUS ADJUSTING DEVICE FOR BINOCULAR

Hideyuki Kimura, Ichikawa, Japan, assignor to Tokyo Bussan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1983, Ser. No. 523,162

Claims priority, application Japan, Aug. 20, 1982, 57-126319[U]

Int. Cl.⁴ G02B 7/02

U.S. Cl. 350—552 **10 Claims**

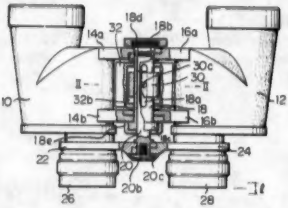
10. A focus adjusting device for a binocular having a pair of object lens barrels each of which is formed with a pair of spaced front and rear connecting brackets, a pair of ocular lens barrels, and a pair of retaining brackets for retaining the ocular lens barrels, comprising:

a hollow cylindrical shaft fixedly mounted to the connecting brackets to interconnect the object lens barrels to each other, said hollow shaft having an elongated slot formed through a side wall thereof along the longitudinal axis thereof;

a reciprocal shaft received in said hollow shaft to move relative to said hollow shaft along the longitudinal axis thereof, said reciprocal shaft having a hole formed through a side wall thereof;

an annular piece in the form of a simple, hollow, open-ended cylinder removably mounted on said hollow shaft and formed with a hole which is located in alignment with the elongated slot of said hollow shaft and the hole of said reciprocal shaft and with a helical slot in an outer surface thereof;

a lock pin extending through the hole of said annular piece, the elongated slot of said hollow shaft and the hole of said reciprocal shaft to lock said annular piece and reciprocal shaft to each other;



a focus adjusting ring rotatably mounted on said hollow shaft and around said annular piece; and

pin means projecting from an interior surface of said focus adjusting ring into said annular piece helical slot, for transmitting the rotation of said focus adjusting ring to said reciprocal shaft via said annular piece;

whereby rotation of said focus adjusting ring causes said reciprocal shaft to move relative to said hollow shaft for focusing of the binocular and whereby substitution of different annular pieces with helical slots of various pitches permits different occular lens feed rates.

4,583,829

EDGE SUPPORTING SYSTEM FOR A TELESCOPE MIRROR

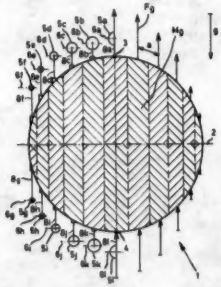
Hans-Jürgen Meier, Aalen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,549

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313324

Int. Cl.⁴ G02B 7/18

U.S. Cl. 350—609 **5 Claims**



1. In an arrangement for mounting a telescope mirror having an optical axis and upper and lower apex points along its peripheral edge, the mirror defining a mirror plane and having components of weight perpendicular to the optical axis, an edge supporting system for taking up said components of weight, the system comprising:

edge support means for applying a plurality of supporting forces to the edge of the mirror at respective predetermined force application points thereon so as to cause said forces to act in a direction substantially parallel to the projection of the direction of the gravity force in said mirror plane; and,

the magnitude quantities F_{gi} of said supporting forces and the respective spacing quantities a_i between each two adjacent ones of said supporting forces being selected so as to cause the quotient F_{gi}/a_i of said quantities to become smaller with increasing distance of said force application points from said upper and lower apex points.

4,583,830

METHOD AND APPARATUS FOR MEASURING THE SHAPE OF THE EYE

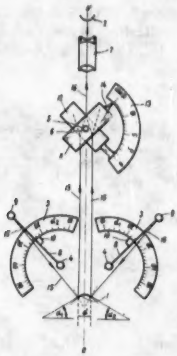
Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

Filed May 28, 1981, Ser. No. 267,895

Claims priority, application Czechoslovakia, Jun. 17, 1980, 4252-80

Int. Cl.⁴ A61B *3/10*

U.S. Cl. 351—212 **4 Claims**



1. Apparatus for measuring the shape of the eye comprising a telescope having its axis coincident with the optical axis of the examined eye and the observer's eye, two plane-parallel prisms mounted one on top of the other and being relatively rotatable in opposite directions by the same angle with respect to the optical axis about a common axis of rotation passing perpendicularly through said optical axis, the adjacent surfaces of said prisms lying in a horizontal plane in which lies the optical axis, the parallel vertical optical surfaces of said prisms being each parallel to the axis of rotation of said prisms, a first scale fixed to one prism and an indicator for said first scale fixed to the other prism, a pair of light sources movable independently from each other in a horizontal plane passing through the optical axis on each side respectively of the optical axis, and a second and third scale for respectively determining the angular position of each light source relative to the optical axis said first scale determining the pitch between the pair of light source reflections from the examined eye.

4,583,831

PSEUDO TELEPHOTO—PSEUDO PANORAMIC CAMERA

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 28, 1985, Ser. No. 717,053

Int. Cl.⁴ G03B *17/24, 3/00*

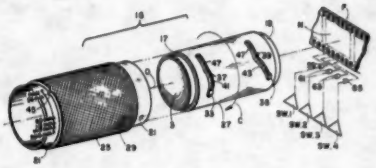
U.S. Cl. 354—106 **10 Claims**

1. A photographic camera for enabling pseudo telephoto prints to be obtained from normal exposures, said camera comprising:

objective lens means adjustable to change its focal length to vary its angular field of view of said lens means;

manually operated means supported for movement to a plurality of positions corresponding to respective focal lengths of said lens means, for adjusting the lens means to a selected focal length to take an exposure, and supported for movement to at least one other position corresponding to a pseudo focal length associated with a different field of view narrower than the possible fields view of said lens means, when said lens means is adjusted to predetermined focal length; and

code means, responsive to movement of said manually operated means to a position corresponding to a pseudo focal



length, for encoding an exposure with indicia representative of the pseudo focal length, whereby a portion of the exposure covered by the angular field of view associated with the pseudo focal length can be identified to obtain a pseudo telephoto print.

4,583,832

DEVELOPING DEVICE

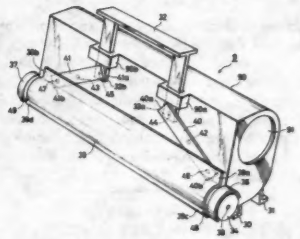
Toshirou Kasamura, and Yasumi Yoshida, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1984, Ser. No. 602,963

Claims priority, application Japan, Apr. 26, 1983, 58-73240

Int. Cl.⁴ G03G *15/08*

U.S. Cl. 355—3 DD **18 Claims**



1. A developing device adapted to be removably mounted with respect to an image forming apparatus and to develop a latent image on an image bearing member when it is mounted with respect to said image forming apparatus, said developing device having:

developer conveying means for carrying a developer thereon and conveying the developer to the latent image on said image bearing member;

support means for supporting said developer conveying means;

protecting means for covering and protecting said developer conveying means, said protecting means being movable to a first position for covering said developer conveying means and a second position retracted from said first position;

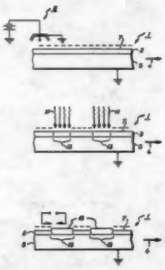
a handle for carrying said developing device, said handle being moveable relative to said support means; and

connecting means for mechanically connecting said handle to said protecting means so that said protecting means is moved from said second position to said first position or from said first position to said second position in response to the movement of said handle relative to said support means.

4,583,833
OPTICAL RECORDING USING FIELD-EFFECT CONTROL OF HEATING

Benjamin Kazan, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1984, Ser. No. 618,272
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—9 3 Claims



1. A method of recording on a recording element having a charge retentive, photosensitive layer on a substantially insulating substrate, said layer characterized by having a property of releasing a gas upon exposure to a sufficient amount of heat in areas thereof not retaining a charge and comprising the steps of

(1) electrostatically charging a free surface of said recording element layer to provide a uniform electrostatic charge thereon,

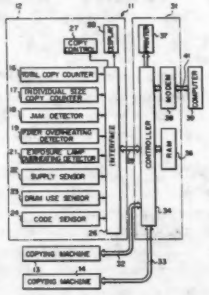
(2) exposing said layer to a pattern of light radiation of sufficient magnitude to selectively discharge areas of said layer in imagewise configuration according to said pattern,

(3) scanning with radio-frequency radiation source linearly across said free surface to sequentially expose said free surface to rapid localized heat causing said discharged areas to swell outwardly from said free surface due to the evolution of said gas, the remaining charged areas of said surface not heated to the same degree as said discharged areas due to the presence of said charge whereby the optical appearance of said imagewise pattern is produced on said free surface.

4,583,834
COPYING APPARATUS

Nachio Seko; Tatsuo Tani; Hiroyuki Idenawa; Takashi Yano, and Isao Nakamura, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 8, 1978, Ser. No. 940,857
Claims priority, application Japan, Sep. 16, 1977, 52-111382; Oct. 6, 1977, 52-120349
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 C 9 Claims



1. A copying apparatus including a plurality of copying machines each having sensor means for sensing operating parameters thereof, characterized by comprising:

storage means provided in each copying machine respectively for storing the parameters thereof;

computing means; and

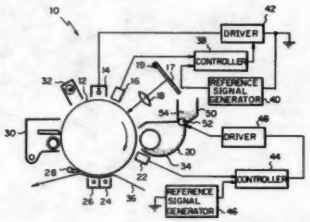
transmission means for transmitting the parameters from the storage means of all of the copying machines to the computing means;

the computing means comprising display means for displaying the parameters of all of the copying machines and being constructed to operate on the parameters in a predetermined manner.

4,583,835
IMAGE CONTROL DEVICE FOR ELECTROPHOTOGRAPHIC COPIER

Masahide Harada, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,747
Claims priority, application Japan, Dec. 10, 1982, 57-216660
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 CH 8 Claims



7. An image control device for an electrophotographic copier which includes a photoconductive element formed with a surface made of a material having a dark resistance which decreases as temperature increases and charging means for depositing a uniform electrostatic charge on said surface, comprising:

temperature sensor means for sensing a temperature of said surface; and

control means responsive to the temperatrue sensor means for controlling the charging means to adjust a charging voltage in accordance with a predetermined function of sensed temperature such that an electrostatic potential in a background image area on the photoconductive element is controlled to a predetermined value;

said predetermined function comprising increasing the charging voltage when the sensed temperature is above a predetermined value in such a manner that a charging current is increased substantially in proportion to the sensed temperature.

4,583,836
ABNORMAL CONDITION DETECTION DEVICE FOR CORONA DISCHARGER IN ELECTROPHOTOGRAPHIC COPYING MACHINE

Akihiko Taniguchi, Kyoto, and Shunju Anzai, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 13, 1984, Ser. No. 570,681
Claims priority, application Japan, Jan. 20, 1983, 58-8120
Int. Cl.[4] G03G *15/02*
U.S. Cl. 355—14 CH 4 Claims

1. A device for detecting an abnormal condition in a corona discharger of an electrophotographic copying machine, said corona discharger including a corona electrode spaced from a photoconductive surface, and a transformer with a primary winding and a secondary winding coupled to the corona electrode for applying a charging voltage thereto, said device comprising:

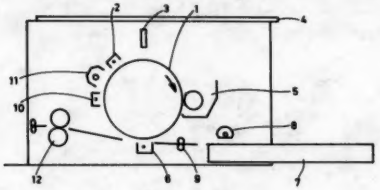
(a) comparator means having first and second input terminals;

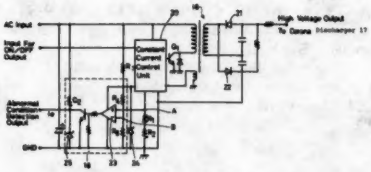
(b) means for applying a reference voltage from said primary winding of said transformer to the first input terminal of the comparator means;

(c) resistor means in circuit with the second input terminal of said comparator means for converting currents passing through the resistor means to a control voltage at the second input terminal;

(d) means for applying a feedback current from the secondary winding of said transformer through said resistor means, said feedback current creating a control voltage higher than said reference voltage during normal operating conditions of the corona electrode, said feedback current becoming essentially zero when an open circuit is formed between the corona electrode and ground, thus providing a control voltage of essentially zero at the second input terminal of said comparator;

(e) constant current control means in circuit with both said secondary winding and said resistor means for applying a





constant current through said resistor means of a limited value which will create a control voltage which is less than said reference voltage, said constant current control means generating a current of said limited value responsive to a low charging voltage output by the secondary winding on said corona electrode, said low charging voltage being of a value indicative of a short circuit between the corona electrode and ground; and

(f) means for generating an abnormal condition signal indicative of either a short or open circuit between said corona electrode and ground whenever the control voltage at the second input of the comparator means is less than the reference voltage at the first input of the comparator means.

4,583,837

COPY BOARD STAND FOR A REPRODUCING CAMERA

Koji Shiga, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 25, 1984, Ser. No. 573,757

Claims priority, application Japan, Jan. 25, 1983, 58-8754[U]; Jan. 25, 1983, 58-8755[U]; Jan. 25, 1983, 58-8760[U]

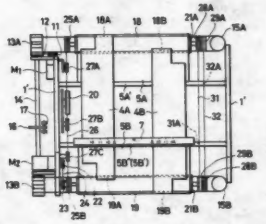
Int. Cl.[4] G03B *27/62*

U.S. Cl. 355—75 **9 Claims**

1. A copy board for a reproducing camera in which the image of an original on said copy board is formed on a copying photosensitive material by means of an optical system, comprising:

mask members movable to conform to an original size, wherein said mask members comprise first and second mask members reciprocably mounted to be reciprocable toward and away from one another in a first direction, and third and fourth mask members reciprocably mounted to be reciprocable toward and away from each other in a second direction perpendicular to said first direction;

original guide means provided on a surface of said copy board for guiding said original; and



means for moving said original guide means in synchronization with movement of said mask members.

4,583,838

PRINTING APPARATUS

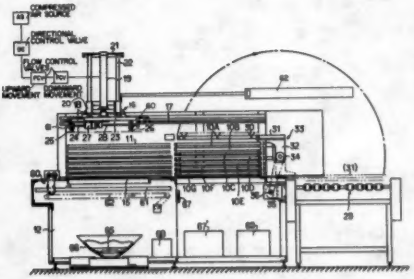
Yoshihiro Machida, Joyo; Isamu Itoi, Kyoto; Seigo Imai, Hirakata, and Kozo Inui, Suita, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 13, 1984, Ser. No. 620,115

Claims priority, application Japan, Jun. 29, 1983, 58-119228

Int. Cl.[4] G03B *27/06*

U.S. Cl. 355—102 **4 Claims**

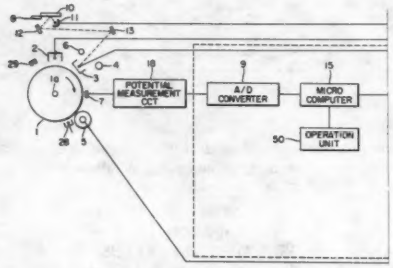


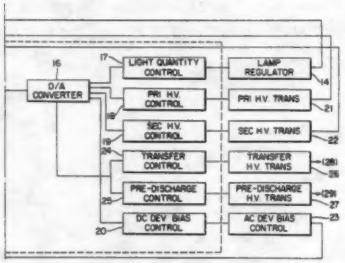
1. A printing apparatus for printing an original film on a photosensitive material, comprising: an exposure section; a first pallet for feeding the original film, said first pallet being formed so as to preliminarily accommodate the original film and a mask film in a superposed manner; at least one second pallet provided and formed so as to accommodate a sensitive sheet of a certain size; a third pallet provided so as to collect and accommodate a spent original film and a spent mask film; a fourth pallet for temporarily storing the sensitive sheet, said pallets being movable between a waiting position and a drawn position in which the pallet is above said exposure section and adjacent said waiting position; a pair of guide members mounted on each of said pallets; a pair of guide rails provided between said waiting position and said drawn position of said pallets, said pair of guide rails being engageable with said pallet guide members; a pallet shifting mechanism for selectively moving each of said pallets along said guide rails in a reciprocative manner between said waiting position and said drawn position; and carrier means including a movable plate having suckers for assisting in said reciprocative movement of said pallets, said carrier means also providing vertical movement between a path for said reciprocative movement and an upper side of said exposure section.

4,583,839
IMAGE RECORDING APPARATUS HAVING AUTOMATIC IMAGE DENSITY REGULATION FUNCTION

Koji Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1983, Ser. No. 478,346
Claims priority, application Japan, Apr. 2, 1982, 57-53749
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 R **8 Claims**





1. An image apparatus comprising:

image forming means for forming an image on a recording medium in accordance with an original image;

detecting means for detecting a density of the original image;

control means for integrating an output from said detecting means for a predetermined period of time and for controlling an image formation condition in accordance with the integrated output, said control means being operative in a first mode in which the image formation condition is controlled in accordance with the integrated output, and being operative in a second mode in which the image formation condition is controlled in a predetermined manner independently of the density of the original; and

selecting means for selecting one of the first and second modes.

4,583,840
EXPOSURE APPARATUS

Syuichi Yabu, Kawasaki, and Hiroshi Sato, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,129
Claims priority, application Japan, Nov. 29, 1982, 57-208766
Int. Cl.⁴ G03B *27/52*
U.S. Cl. 355—30 **19 Claims**

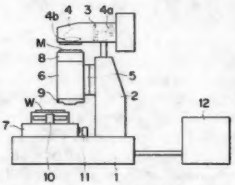
1. An exposure apparatus comprising:

first holder means for holding an original;

second holder means for holding a radiation sensitive member;

a projection system for projecting an image of said original onto said radiation sensitive member;

illumination means for illuminating said original with an illumination energy to expose said radiation sensitive



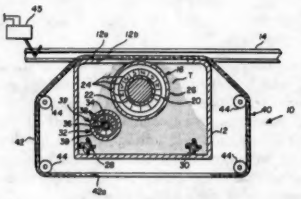
member to the image of said original through said projection system; and

means for supplying heat, during the time of no image exposure being effected, to said projection system to maintain its imaging position.

4,583,841
ELECTROGRAPHIC COPIER DEVELOPER STATION

Robert P. Crandall, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1984, Ser. No. 633,564
Int. Cl.⁴ G03G *15/09*
U.S. Cl. 355—3 DD **6 Claims**



1. Developer station for use in an electrographic copier utilizing moving discrete dielectric sheets adapted to respectively carry latent image charge patterns and travel along a path in pattern-developing relation to such station, said developer station comprising:

a housing forming a reservoir for developer material and having an opening in juxtaposition with the travel path;

means for transporting developer material from such reservoir through said opening and into such travel path;

a shielding belt defining a window through a portion thereof, means for supporting said shielding belt, between said said opening and such travel path, for movement to a position for blocking said opening to prevent developer material from reaching such travel path and to a position where said window overlies said opening for unblocking said opening; and

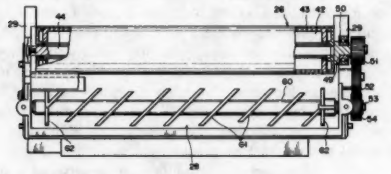
means, responsive to approach of a discrete dielectric sheet moving along such travel path toward pattern-developing relation to the station, for moving said shielding belt from its blocking position to its position where said window overlies said opening to enable transported developer material to contact such discrete dielectric sheet when such sheet is in pattern-developing relation to the developer station.

4,583,842

DEVELOPING APPARATUS

Mamoru Shimono, Yokohama; Shinichi Hashimoto, Fujisawa, and Fuminobu Nishimura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 16, 1984, Ser. No. 661,562
Claims priority, application Japan, Oct. 19, 1983, 58-195724
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—3 DD 8 Claims



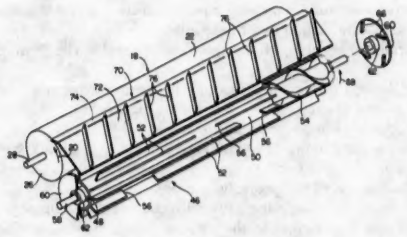
1. A developing apparatus comprising:
a casing storing a developing agent;
a developing agent carrier extending in one direction in the casing and carrying the developing agent on the surface thereof; and
means for stirring and conveying the developing agent, said means extending in said one direction in the casing and including stirring means for stirring the developing agent stored in the casing, conveying means for reciprocating the developing agent in the casing along said one direction, and nonconveyance means arranged at both end portions of the stirring and conveying means along said one direction and adapted to cause the developing agent to stagnate when the developing agent reaches the end portions.

4,583,843

DEVICE FOR DEVELOPING LATENT ELECTROSTATIC IMAGE

Yosuke Ohata, Habikino, and Keiichiro Hyodo, Kobe, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 2, 1984, Ser. No. 626,828
Claims priority, application Japan, Jul. 18, 1983, 58-129554
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 DD 11 Claims



1. A laten electrostatic image developing device comprising
a developer receptacle for holding a developer composed of carrier particles and toner particles;
a developer applicator means for holding part of the developer in the developer receptacle on its surface in a developer draw-up zone and carrying it to a developing zone;
a developer agitating means disposed in relation to a developer peeling zone located downstream of the developer zone and upstream of the developer draw-up zone when viewed in the moving direction of the developer and the upstream end portion of the developer draw-up zone when viewed in the moving direction of the developer;
a toner particle receptacle having a toner particle discharge opening and located above the developer agitating means;
a toner particle supplying means adapted to be operated selectively to supply toner particles from the toner particle receptacle to the developer receptacle through said discharge opening;
wherein the developer agitating means is constructed of a rotary agitating mechanism having a plurality of agitating blades extending in the widthwise direction at circumferentially spaced intervals, and a cut portion is formed in at least some of the agitating blades;
wherein the developer applicator means is comprised of a cylindrical sleeve member adapted to be rotated in a predetermined direction about the axis of rotation extending substantially horizontally in the widthwise direction and a magnet disposed in the sleeve member,
the developer draw-zone is located on one side of the sleeve member,
the developing zone is located on the other side of the sleeve member,
the developer peeling zone is located on said one side of the sleeve member and beneath the developer draw-up zone, and
the rotary agitating mechanism is disposed adjacent to said one side of the sleeve member with its axis of rotation being substantially parallel to the axis of rotation of the sleeve member, and adapted to be rotated in the same direction as the sleeve member;
a brush length-adjusting member for removing excess of developer from the surface of the developer applicator means, said brush length-adjusting member being disposed at a predetermined distance from the surface of the developer applicator means in a brush length-adjusting zone provided nearly at the uppermost site of the sleeve member;
a partitioning plate extending from above the rotary agitating mechanism to the upstream side of the brush length-adjusting zone and above the moving path of the developer carried from the developer draw-up zone to the upstream side of the brush length-adjusting zone while being held on the surface of the sleeve member;
a contact-type developer detector having a developer contacting surface;
wherein a guide member extending upwardly from the surface of the sleeve member while being inclined toward one side is attached to the brush length-adjusting member so that developer removed from the surface of the sleeve member by the action of the brush length-adjusting member in the brush length-adjusting zone is conducted to the partitioning plate along the guide member and flows over the partitioning plate and falls onto the rotary agitating mechanism; and
wherein the developer contacting surface of the developer detector is exposed to the guiding surface of the guide member.

4,583,844

IMAGE RECORDING APPARATUS WITH SEPARABLE UPPER AND LOWER SECTIONS AND DISPLACEABLE PAPER FEED UNIT

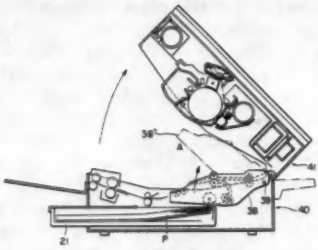
Hiroyuki Honda, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,643

Claims priority, application Japan, Sep. 19, 1983, 58-172654; Sep. 19, 1983, 58-172655; Sep. 19, 1983, 58-172657; Sep. 27, 1983, 58-149970[U]; Sep. 27, 1983, 58-149971[U]; Sep. 27, 1983, 58-149972[U]; Sep. 27, 1983, 58-149974[U]

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 SH 16 Claims



1. An image recording apparatus comprising:

an automatic paper-feed for feeding recording paper one after another from a stack of paper;

a manual paper-feed means for feeding recording paper manually; and

a main body which comprises an upper frame coupled to a lower frame and which are relatively separable, wherein at least a part of said automatic paper-feed means and at least a part of said manual paper-feed means are arranged in one unit frame which is coupled to said rain body, one end of said unit frame being displaceably aranged relative to said main body when said upper frame and lower frame are relatively separated.

4,583,845

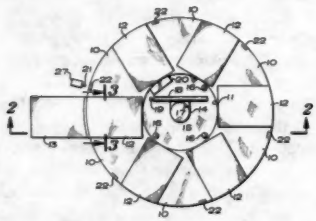
PHOTOGRAPHIC PRINTER

Orren J. Lucht, Farmington, and Stephen A. Bartz, Jordan, both of Minn., assignors to Lucht Engineering, Inc., Minneapolis, Minn.

Continuation of Ser. No. 419,143, Sep. 17, 1982, abandoned, which is a continuation of Ser. No. 218,578, Dec. 22, 1980, abandoned. This application May 29, 1984, Ser. No. 614,945

Int. Cl.[4] G03B *27/52 27/44*

U.S. Cl. 355—46 16 Claims



1. In a photographic printer of the type having lens assembly means including a plurality of optical element means spaced from each other along the general direction of the printer optical path, the optical element means being movable relative to each other between first and second positions with one of said first and second positions being within the optical path and the other being without the optical path, and having a plurality of positioning means adapted to cooperate with different ones of said optical element means for selectively positioning said optical element means in said first or second position, the improvement wherein said lens assembly means define one of said first and second positions and further comprising:

stationary optical element means receiving station means defining the other of said first and second positions in common for the optical element means of multiple lens assembly means, each of said lens assembly means and said receiving station means comprising track means; and

means movably supporting a plurality of said lens assembly means and alternatively positioning each with its optical element means in conjunction with said positioning means and the track means of said lens assembly means in alignment with track means of said receiving station means for movement of said optical element means along said track means from said lens assembly means to said receiving station means, and return, on movement between said first and second positions.

4,583,846

SLIT EXPOSURE TYPE COPYING MACHINE CAPABLE OF COPYING WITH ANAMORPHIC MAGNIFICATION

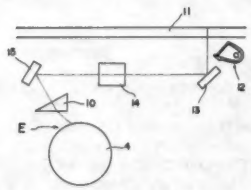
Hiromu Nakamura; Toshihiko Ueda, both of Toyokawa; Haruhiro Hyodo; Muneo Kuroda, both of Toyohashi; Akiyoshi Hamada; Hiroaki Nakauchi, both of Toyokawa, and Nobuo Kanai, Yawata, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 20, 1984, Ser. No. 673,523

Claims priority, application Japan, Nov. 22, 1983, 58-220065; Nov. 25, 1983, 58-222876; Nov. 25, 1983, 58-222877; Nov. 29, 1983, 58-225880; Nov. 29, 1983, 58-226404

Int. Cl.[4] G03B *27/68, 27/34, 27/40*

U.S. Cl. 355—52 11 Claims



1. A slit exposure type copying machine capable of copying with anamorphic magnification comprising:

moving means for moving a photosensitive member past an exposure station at a predetermined speed,

means for scanning the image of an original in the form of a slit,

projection means for projecting the scanned original image on the photosensitive member at the exposure station to form an image on the member,

means for driving the scanning means at a scanning speed corresponding to a magnification different from the magnification of the projection means, and

at least one triangular prism disposed in the optical path from the original to the photosensitive member for performing a refractive action only in the scanning direction, the degree of the refractive action being so set as to compensate for the difference between the magnification of the projection means and the magnification corresponding to the speed of the scanning means.

4,583,847

MOUNTING TABLE FOR WAFERS

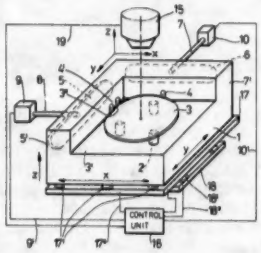
Udo Battig, 41, Str.des 7.Oktober; Peter Dittrich, Fr.-Körner-Strasse, both of 6900 Jena, District of Gera; Norbert Oertel, 39, Otto-Grotewohl-Strasse, 6902 Jenna-Lobeda, District of Gera; Günter Osterland, 44, Fr.-Reuter-Str., 6900 Jena, District of Gera; Mathias Rücknagel, 106, Langenorla 6841, District of Gera; Werner Scheler, 3, Str.der Kosmonauten, 6900 Jena, District of Gera, and Klaus Schultz, 2, Schlossberggasse, 6908 Jena-Burgau, District of Gera, all of German Democratic Rep.

Filed Jul. 16, 1984, Ser. No. 631,388

Claims priority, application German Democratic Rep., Jul. 1, 1983, 2526761

Int. Cl.[4] G03B 27/42

U.S. Cl. 355—53 9 Claims



1. A wafer mount for mounting a semiconductor wafer for being processed in a photolithographic procedure, comprising

a prismatic mounting body made of glass-ceramics,

a projection lens for producing a pattern on said wafer,

said prismatic mounting body having a substantially horizontal top face in opposition to said projection lens, and two back-supports substantially at right angles to one another provided at two neighboring end portions of said top face,

said back-supports having each a back face, said wafer being arranged in the projection plane of said projection lens,

a first laser path measuring system in spaced opposition to one of the back faces,

a second laser measuring system in spaced opposition to the other of the back faces,

a first elongated substantially plane reflector being attached to said one back face,

a second elongated substantially plane reflector being attached to said other back face,

said first reflector being for reflecting a first laser beam emitted by said first laser path measuring system back to the same,

said second reflector being for reflecting a second laser beam emitted by said second laser path measuring system back to the same,

said first and said second laser beams defining a plane substantially coinciding with a surface of said wafer,

displacement means for displacing said prismatic wafer mount in at least two coordinate directions,

a control unit,

means for connecting said control unit to said displacement means,

means for connecting said control unit to said first and second laser path measuring system,

means for seating said wafers on said top face,

means for aligning said wafer relative to said projection lens, the alignment means being incorporated in said projection lens,

means for connecting said projection lens to said control unit.

4,583,848

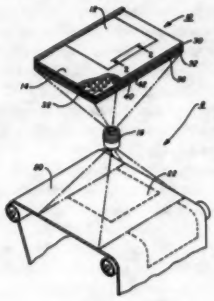
IMAGING SYSTEM USING A FULL FRAME ILLUMINATION ARRAY

John A. Durbin, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 3, 1984, Ser. No. 637,656

Int. Cl.[4] G03B 27/54

U.S. Cl. 355—67 7 Claims



1. A full frame imaging system comprising:

a transparent glass platen for supporting a document to be copied,

a projecting means for projecting a reflected image of the entire document onto a photoreceptor,

a two-dimensional illuminator array, said array positioned between said platen and said projecting means, and

means for activating said array whereby light provided by said array is directed towards, and reflected from, said document, passing through said array and projected onto said photoreceptor to form a latent image of the entire document thereon.

4,583,849

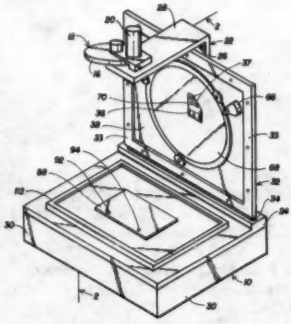
METHOD AND APPARATUS FOR EXPOSING COLOR CORRECTION MASKS AND COLOR SEPARATION NEGATIVES

William R. Mielenz, 1136 Hazel Ave., Deerfield, Ill. 60015

Filed Jul. 18, 1984, Ser. No. 632,019

Int. Cl.[4] G03B 27/04

U.S. Cl. 355—88 27 Claims



1. A method of producing a set of color separation negatives from a color transparency under identical negative development conditions, each of said negatives having a desired contrast index, comprising the steps of

obtaining from separation negative film data a single set of

negative development conditions which will substantially provide said desired contrast index for each of said negatives;

obtaining from separation negative film data a negative exposure time for each of said negatives so that the contrast index of each of said negatives will be substantially as desired when said negatives are developed;

obtaining from mask film data a single set of mask development conditions for a set of color correction masks to be used when exposing said set of separation negatives;

obtaining from mask film data a mask exposure time for each of said masks so that when said masks are exposed for said mask exposure times and developed under said mask development conditions, and said negatives are exposed for said negative exposure times and developed under said negative development conditions, said negatives have said desired contrast indices;

sequentially placing each of a plurality of segments of at least one piece of color correction mask film in contact with said transparency and exposing each of said mask film segments to properly filtered light for said predetermined mask exposure times, said filtered light being provided by a light source which is a predetermined distance from said transparency and said mask film segments;

developing all of said mask film segments under said single development conditions to produce said set of color correction masks;

prepositioning each of a plurality of segments of at least one piece of separation negative film for contact with said transparency, prepositioning said color correction masks for contact with and proper registration with said transparency on the side of said transparency opposite said segments of separation negative film, sequentially placing said transparency in contact with and in proper registration with each of said selected color correction masks and sequentially exposing said negative film segments to properly filtered light passed through each of said selected masks and through said transparency for said predetermined negative exposure times when each said selected mask is in contact with said transparency, said filtered light being provided by said light source; and

developing all of said negative film segments under said negative development conditions to produce said set of separation negatives.

4,583,850

PHOTOGRAPHIC CAMERA AND ITS USE IN CONJUNCTION WITH PHOTOGRAPHIC SILVER HALIDE EMULSION MATERIALS

Christiaan G. Thiers, Schoten, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

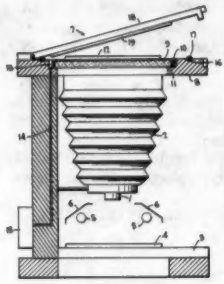
Filed Mar. 6, 1984, Ser. No. 586,833

Claims priority, application European Pat. Off., Mar. 18, 1983, 83200374.3

Int. Cl.[4] G03B *27/20*

U.S. Cl. 355—91 **4 Claims**

1. A process camera including a lens or lens system movably mounted for focussing light with respect to a glass sheet serving as an image plane and a vacuum-operated frame back provided with a flexible blanket having a surface relief configuration on its contacting surface for holding by contact therewith a photographic material against the said glass sheet, characterised in that the edges of the glass sheet are provided with



a material absorbing light to which the glass sheet is transparent.

4,583,851

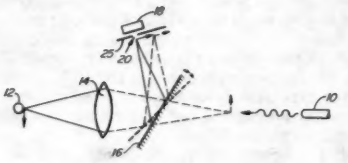
METHOD AND APPARATUS FOR MONITORING OPTICAL FIBER CONCENTRICITY

Masamichi Yataki, Chandlers Ford, England, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 282,820, Jul. 13, 1981, abandoned. This application Mar. 19, 1985, Ser. No. 713,736

Int. Cl.[4] G01N *21/89*

U.S. Cl. 356—73.1 **2 Claims**



1. A method of monitoring core-jacket concentricity of an optical fiber having a core and a transparent jacket surrounding the core, the method comprising:

directing a beam of light at the fiber;

monitoring the intensity of light reflected from the fiber in a range of angles around the fiber axis, said reflected light comprising light reflected from a surface of the jacket in combination with light reflected from a surface of the core beneath the jacket;

determining the angular position corresponding to a reflected light intensity maximum, the difference between the incident light direction and said angular position indicative of core-jacket eccentricity.

4,583,852

ATTITUDE TRANSFER SYSTEM

Lawrence W. Cassidy, New Milford, and Douglas R. Everhart, Danbury, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 31, 1983, Ser. No. 481,027

Int. Cl.[4] G01B *11/26*; G01C *1/00*

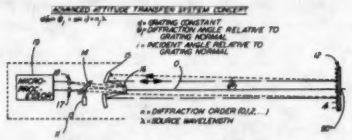
U.S. Cl. 356—152 **10 Claims**

1. A system for determining attitude of a first object relative to a second object comprising:

first means on said first object for transmitting a beam of monochromatic light,

lines grating means on said second object disposed in the path of said beam of monochromatic light for reflecting

said beam of monochromatic light as a diffracted fan of collimated light bundles back to said first means,


ADVANCED ATTITUDE TRANSFER SYSTEM CONCEPT
d= GRATING CONSTANT
θ= DIFFRACTION ANGLE RELATIVE TO GRATING NORMAL
i = INCIDENT ANGLE RELATIVE TO GRATING NORMAL
n = DIFFRACTION ORDER (0,1,2...)
λ = SOURCE WAVELENGTH

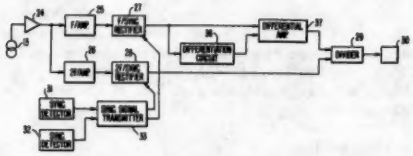
said first means including sensor means having a face disposed in the path of said reflected bundles of light for determining pitch, yaw and roll based on the position of said light bundles falling on said face of said sensor means.

4,583,853

RATIO TYPE DOUBLE-BEAM SPECTROPHOTOMETER

Hirobumi Maeda; Yoshiro Fukasawa, and Makoto Kobayashi, all of Tokyo, Japan, assignors to Japan Spectroscopic Co., Ltd., Hachioji, Japan

Filed Mar. 2, 1984, Ser. No. 585,588
Claims priority, application Japan, Mar. 5, 1983, 58-36296
Int. Cl.⁴ G01J *3/08, 3/42*
U.S. Cl. 356—323 **8 Claims**



1. A ratio type double-beam spectrophotometer comprising

a light source for emitting a beam of light,

a monochromator,

an optical system, including reference and sample beam paths, for distributing the beam from the source between the reference and sample beam paths to form reference and sample beams and for guiding the reference and sample beams along a common beam path toward said monochromator,

a reference cell inserted in the reference beam path,

a sample cell inserted in the sample beam path,

a photodetector located downstream of said monochromator for detecting the intensity of monochromatic light from said monochromator, and

signal processing means electrically connected to said photodetector for processing an output signal of said detector,

wherein said optical system is constructed such that the output signal of said photodetector is a composite signal in which a first frequency component correlated to at least one of the intensity of the light beam transmitted by the sample cell (to be referred to as sample beam intensity) and the intensity of the light beam transmitted by the reference cell (to be referred to as reference beam intensity) is combined with a second frequency component correlated to at least the other of the sample beam intensity and the reference beam intensity and corresponding to a frequency integral times as high as the frequency of the first frequency component, said signal processing means includes

discriminator means for discriminating the output signal of said photodetector into said first frequency component and said second frequency component,

a first synchronous rectifier connected to said discriminator means for synchronously rectifying the first frequency component therefrom,

a second synchronous rectifier connected to said discriminator means for synchronously rectifying the second frequency component therefrom, and

computing means for computing the outputs of said first and second synchronous rectifiers to yield the ratio of the sample beam intensity to the reference beam intensity,

the improvement comprising

a differentiation circuit connected to said first synchronous rectifier for differentiating the output signal thereof, and

subtraction means connected to said first synchronous rectifier and said differentiation circuit for subtracting the output of said differentiation circuit from the output of said first rectifier,

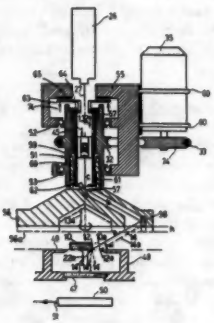
wherein said computing means is connected to said first synchronous rectifier through said differentiation circuit and said subtraction means while it is directly connected to said second synchronous rectifier.

4,583,854

HIGH RESOLUTION ELECTRONIC AUTOMATIC IMAGING AND INSPECTING SYSTEM

Boris Lozar, Milan, Italy, assignor to General Electric Company, Detroit, Mich.

Filed Jul. 13, 1983, Ser. No. 513,486
Claims priority, application Italy, Jul. 15, 1982, 22401 A/82; Mar. 20, 1983, 19860 A/83
Int. Cl.⁴ G01N *21/88*
U.S. Cl. 356—237 **15 Claims**



1. An imaging system for dimensional inspection and edge defect detection of metal inserts for machining operations having a pair of parallel surfaces and a planar edge surface defining a cutting edge therewith comprising in combination:

(a) support means supporting an insert in a darkened environment;

(b) optical means to project a single blade shaped light beam angularly across said insert cutting edge, said beam having a minimum width and corresponding maximum intensity at an area coincident with said cutting edge;

(c) said optical means includes a laser light source and a lens arrangement to provide a single triangular shaped beam which coverges in the direction of the insert so that the apex of the beam falls essentially on a point on said cutting edge;

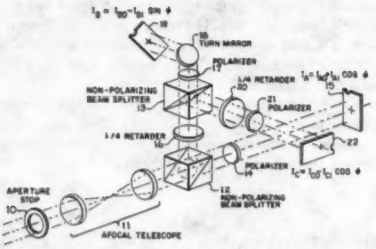
(d) said optical means including a revolving head and revolving means therefor to move said light beam along said cutting edge said insert so that edge defects become a source of perturbations of the single blade shaped beam to provide light scattering and diffusion; and

(e) electronic detection means to record and display said light scattering as a measurement of said defect or a dimensional change of said insert.

4,583,855
OPTICAL PHASE MEASURING APPARATUS

Noah Bareket, San Jose, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Feb. 17, 1984, Ser. No. 581,185
Int. Cl.[4] G01J 9/02
U.S. Cl. 356—351 12 Claims



1. An apparatus for measuring spatial distribution of phase difference between a signal beam and a reference beam in substantially real time, said signal and reference beams being coherent optical beams superimposed upon each other and having orthogonal polarization states with respect to each other, said apparatus comprising:

(a) means for splitting said signal and reference beams into at least three channels so that corresponding components of said signal and reference beams are propagated in each channel, the components of said signal and reference beams in each channel being orthogonally polarized to each other;

(b) means for adding a constant phase difference between the components of said signal and reference beams in each channel;

(c) means for causing interference of the components of said signal and reference beams of different phase at a corresponding interference surface in each channel;

(d) means for detecting an irradiance distribution of the interference of the components of said signal and reference beams of different phase at the interference surface in each channel, and for generating an electronic signal indicative of said irradiance distribution at the interference surface in each channel; and

(e) means for processing electronic signals indicative of the corresponding irradiance distributions at the interference surfaces in all of said channels, and for performing an algorithm for measuring the spatial distribution of phase difference between said superimposed signal and reference beams in substantially real time from said electronic signals.

4,583,856
RESOLUTION SYSTEM FOR INTERFEROMETER

Robert C. Moore, Rochester, N.Y., assignor to GCA Corporation, Bedford, Mass.

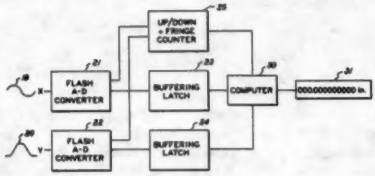
Filed Jun. 27, 1983, Ser. No. 507,750
Int. Cl.[4] G01B 9/02
U.S. Cl. 356—358 4 Claims

1. A resolution system for a laser interferometer having an optical system producing two detected signals with voltages that vary to form two sine waves in quadrature as interference fringes occur from changes in path lengths between reference and measurement beams, said resolution system comprising:

a. a pair of analog-to-digital converters respectively receiving said varying voltage signals and arranged for converting each signal into digital values subdividing each sine wave fringe cycle into a plurality of increments;

b. an up/down counter supplied with a significant digit from each of said converters for counting fringes corresponding to said changes in path lengths; and

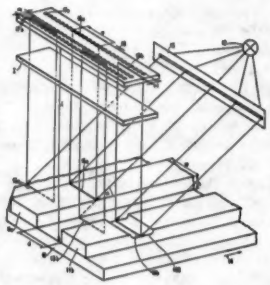
c. a computer arranged with access to a fringe count output from said counter and to said digital increments from said converters for determining from said fringe count a distance measurement based on a number of fringes occurring from said changes in path lengths and for determining from said digital increments a fine resolution of said distance measurement based on final values of said signals at any subdivided fringe cycle increments after said changes in said path lengths.



4,583,857
APPARATUS FOR AUTOMATIC OPTICAL PROPERTY TESTING

Michael Grammerstorff, Aidlingen, and Hans Pietruschka, Rottenburg, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 24, 1983, Ser. No. 460,702
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204086
Int. Cl.[4] G01B 11/14
U.S. Cl. 356—375 6 Claims



1. Apparatus for the automatic optical property testing of substantially two-dimensional relief-structured patterns,

characterized in that an optical scanning head is positioned at a fixed operating distance (1) above a test pattern including a base plate having an object thereon of nominal height (h) above said plate movable relative to said head, said scanning head directing a light band, obliquely incident at an angle α, to said base plate and comprising a first linear photodiode array arranged parallel to said light band and perpendicularly above the intersection of the light band with the plane corresponding to said nominal height (h) in which the light reflected from said object is incident if the nominal height (h) is maintained, and a pair of second diode arrays arranged parallel to said first linear photodiode array, with a mutual spacing (m) in which the light reflected at said base plate is incident if the operating distance (1) has been kept, and that the output signals of said second diode array pair act as control signals for restoring the operating distance (1).

4,583,858

DEVICE FOR USE IN CHROMATOMETRY OF SAMPLES

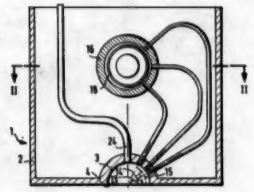
Karl Lebling, Munich; Helmut Reisser, Vaterstetten, both of Fed. Rep. of Germany, and Hendrik J. A. Saris, Bennebroek, Netherlands, assignors to Deutsche Akzo Coatings & Byk-Mellinckrodt Chemische Products, GmbH, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 441,054

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1981, 3145633

Int. Cl.[4] G01J *3/50*

U.S. Cl. 356—402 25 Claims



1. A device for use in chromatometry of samples, such as colored surfaces, comprising: a testing head including a measuring cell having a measuring surface, the measuring cell comprising a plurality of optical light guide means disposed at different angles to the measuring surface and in different radial planes for supplying radiation irradiating said sample and at least one optical light guide means for diverting radiation reflected from said sample to an analyzing measuring means, wherein there is provided a switching system which enables fewer than all of the plurality of optical light guide means for supplying radiation to be selectively turned on and turned off.

4,583,859

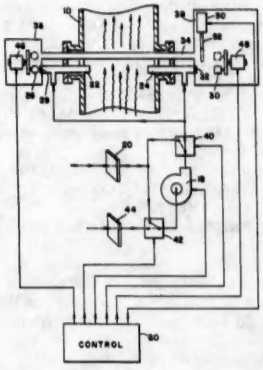
FILTER CLEANING SYSTEM FOR OPACITY MONITOR

George R. Hall, II, Wickliffe, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 30, 1984, Ser. No. 595,205

Int. Cl.[4] G01N *21/15*

U.S. Cl. 356—438 5 Claims



1. A control system for coordinating the calibration and filter cleaning functions in an opacity monitor having a light source and a light sensor on opposite sides of a first optical path for measuring the opacity of a gas in the first optical path, comprising:

calibration means operatively connected to the light source and sensor for calibrating the opacity monitor during a calibration period;

a pair of protective pipes having facing open first ends and lying on the first optical path between the light source and sensor with the gas whose opacity is to be measured adapted to pass between said open first ends;

a blower having an input for receiving air and an output for supplying air;

a primary filter for supplying filtered air for purging said protective pipes;

a secondary filter for supplying filtered blowdown air for blowdown cleaning of said primary filter;

valve means connected to said blower input and output, to said primary filter and to said pair of protective pipes, having a first position for supplying purging air from said primary filter to said blower input and from said blower output to said protective pipes for purging said protective pipes, and a second position for supplying blowdown air from said secondary filter to said blower input and from said blower output to said primary filter for cleaning said primary filter; and

control means connected to said calibration means and to said valve means for moving said valve means into said second position thereof when said calibration means is activated to calibrate the opacity monitor during said calbration period.

4,583,860

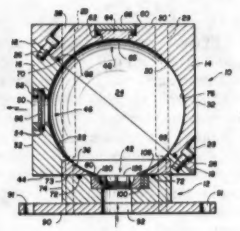
OPTICAL MULTIPLE SAMPLE VACUUM INTEGRATING SPHERE

Cyrus L. Butner, Arlington, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 30, 1983, Ser. No. 556,481

Int. Cl.[4] G01N *21/47, 21/01*

U.S. Cl. 356—446 5 Claims



1. Apparatus for making optical radiometric measurements on a plurality of samples, comprising, in combination:

integrating sphere means (10) including a spherical cavity (24) having a uniform reflecting surface (76), and input port (42) for coupling optical energy from an optically irradiated sample (136) into said cavity (24), and at least one output port (46) for coupling optical output energy uniformly from said cavity to optical detector means;

sample transport means (12) secured to said integrating sphere means (10) and having means (90) for being attached to a source of incident optical radiation and including an elongated container housing (74) having a central aperture (92) aligned with said input port (42), said housing having a lengthwise channel (78) formed therein for receiving a movable sample holder (80), said sample holder having a plurality of sample receiving means (118, 120, 122, 124) and respective apertures (128, 130, 132, 134) formed therein which are adapted to be selectively placed in alignment with said central aperture (92) and said input port (42) upon movement of said sample holder (80), and means (82) for translating said sample holder (80) lineraly within said channel (78) whereby plural samples (136) respectively positioned in said sample receiving means are

placed in the path of incident radiation from said source, one at a time;

a vacuum seal (72) between said sample transport means (12) and said integrating sphere means (10); and

said output port (46) including an optical output window (56) and a vacuum seal (54) whereby a vacuum tight output port is provided and the entire appartus may be evacuated and radiometric measurements can be made on said samples (136) under a vacuum by translation of said sample holder (80) without the need to interrupt the vacuum while placing individual samples (136) in the path of incident radiation.

4,583,861

SURFACE CONDITION JUDGING APPARATUS

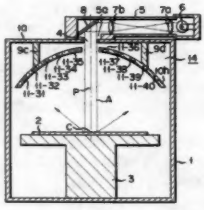
Hiroshi Yamaji; Shigeru Ogawa, and Katsuya Okumura, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 3, 1982, Ser. No. 404,899

Claims priority, application Japan, Aug. 12, 1981, 56-118790[U]; Dec. 26, 1981, 56-209509; Feb. 17, 1982, 57-22680

Int. Cl.⁴ G01N *21/47*

U.S. Cl. 356—446 9 Claims



1. A method for evaluating a bonding property of an aluminum deposition film to which a metal bonding wire is to be bonded, comprising the steps of:

projecting a light beam onto the surface of the aluminum deposition film deposited on a semiconductor substrate in a direction normal thereof;

receiving a reflection from said surface of the aluminum deposition film at positions along a spherical surface with the center of the sphere located at the center of the incidence spot of the light beam and producing electric signals having magnitude corresponding to the intensity of the received reflection;

obtaining a reflection intensity distribution curve by presenting the relationship between the intensity of the received reflection and the reflection angle defined between a normal line at said positions, said curve including a central reflection portion and diffusion reflection portions obtained at both sides of the central reflection portion; and

comparing the reflection intensity distribution curve with standard intensity distribution curves which include a first curve having a central reflection portion with a very high peak value with respect to those diffusion reflection portions of low value obtained on both sides of the central reflection portion, a second curve having a central reflection portion with a peak value and monotonically decreasing diffusion reflection portions having relatively high values with respect to that of said diffusion reflection portions of the first curve, and a third curve having a central reflection portion with a peak value and diffusion reflection portions each having a peak value and having relatively high values with respect to that of said diffusion reflection portions of the first curve, respectively;

thereby determining the bonding property to be satisfactory when the obtained curve is similar to either one of said first and second curves and being unsatisfactory when the obtained curve is similar to said second curve.

4,583,862

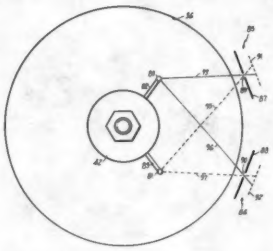
OPTICAL POSITION AND ORIENTATION SENSING SYSTEMS

Carl M. Ferrar, East Hartford, and Robert Zincone, Norwalk, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1983, Ser. No. 562,622

Int. Cl.⁴ G01B *11/26;* G01M *1/00*

U.S. Cl. 356—152 3 Claims



1. An optical system for sensing the position and orientation of a first body with respect to a second body, comprising:

a pair of optical sources disposed in spaced apart relationship with respect to each other on said first body;

a pair of optical sensors disposed in spaced apart relationship with respect to each other on said second body, each of said optical sensors including an array of optical detectors and an opaque shield having a slit therein, disposed adjacent the corresponding array between said detectors and said sources, said detectors being disposed with respect to the assumable positions and orientations of said first body such that the light of a first one of said sources provides, through said slits, an image on each of said arrays which is closer to one end of said arrays than the image of the light from the other of said sources on said arrays, for all positions and orientations of said first body, the position of each image on each array being indicative of the angle between such array and the corresponding source; and

means responsive to the output of said arrays for providing signals indicative of the image position signals thereon, said image positions uniquely defining the position and orientation of said first body.

4,583,863

HOUSEHOLD ICE-CREAM MACHINE

Alberto Pandolfi, Milan, Italy, assignor to Brevetti Gaggia S.p.A., Milan, Italy

Filed Oct. 14, 1983, Ser. No. 542,048

Claims priority, application Italy, Oct. 14, 1982, 53814/82[U]; Dec. 30, 1982, 54143/82[U]

Int. Cl.⁴ A23C *3/04;* B01F *7/16;* A23G *9/00*

U.S. Cl. 366—149 7 Claims

1. Household ice-cream machine, comprising an annular container adapted to hold a quantity of ice-cream ingredients, a blade mounted in the container; a geared motor drivingly connected to said blade, and a cooling system including a motor-compressor, a condenser and an evaporator coil, wherein the improvements consist in:

an annular vessel;

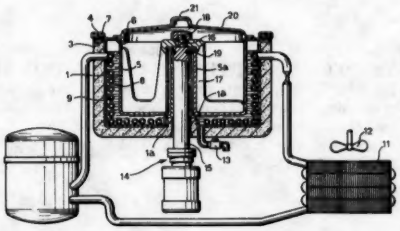
means releasably supporting the annular container within the annular vessel and preventing rotation of the annular container with respect to the annular vessel;

there being a substantial interspace between the annular container and the annular vessel when the annular container is assembled therein, said interspace being further defined by an outer side wall and bottom of the annular container,

said interspace containing a quantity of low-freezing point

solution such that the annular container is substantially immersed in said low-freezing point solution, and

the evaporator coil being disposed in favorable heat-exchange relationship with said low-freezing point liquid in said interspace,



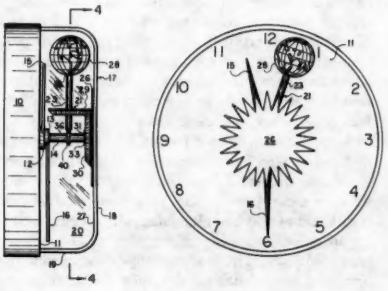
wherein the annular container is easily removable from the annular vessel for cleaning after use by simply releasing said supporting means.

4,583,864

SOLAR SYSTEM CLOCK

Joseph R. Graves, 2132 Second Ave., Apt. 505, Seattle, Wash. 98121

Filed May 10, 1985, Ser. No. 732,747
Int. Cl.[4] G04B *19/26*
U.S. Cl. 368—17 **9 Claims**



1. A clock comprising

(a) a timing mechanism,

(b) a generally flat circular face,

(c) coaxial drive shafts centrally positioned in said face and rotated by said timing mechanism to accommodate hour, minute and second hands,

(d) a transparent cover mounted upon said face in spaced apart relationship therewith, said cover having a substantially flat forward panel having interior and exterior surfaces,

(e) an opaque representation of the sun centrally affixed to said forward panel, and

(f) a motion producing mechanism comprising:

(1) a first axle representing an extension of the drive shaft intended to drive a second hand, and having a distal extremity positioned adjacent the center of said forward panel,

(2) a second axle perpendicularly mounted to said first axle in parallel disposition to said face and adapted to rotate about its own axis of elongation, and terminating in a radially outermost extremity located radially beyond the sun,

(3) a substantially spherical representation of earth affixed to the outermost extremity of said second axle,

(4) moving gear means mounted upon said second axle in perpendicular disposition to said face,

(5) stationary gear means affixed to the interior surface of said forward panel in annular relationship to the center thereof, and adapted to engage and rotate said moving gear means, and

(6) bearing means centrally associated with the interior surface of said forward panel and adapted to support the distal extremity of said first axle, whereby

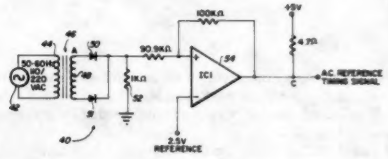
(7) movement of the shaft intended to drive a second hand rotates the earth in a circular path around the sun and simultaneously produces axial rotation of the earth.

4,583,865

REAL TIME CLOCK SYNCHRONIZATION

David L. Kirk, and Robert L. Spiesman, both of Phoenix, Ariz., assignors to Honeywell, Phoenix, Ariz.

Filed Dec. 17, 1984, Ser. No. 682,646
Int. Cl.[4] G04C *11/00*; G04F *8/00*
U.S. Cl. 368—46 **14 Claims**



1. The method of synchronizing a digital timer with the frequency of a source of A.C. power, said timer producing internal, fine resolution, synchronization and real time, timing signals, the periods of the fine resolution, synchronization and real time timing periods being integral multiples of the period of the internal timing signal, said method comprising the steps of:

1. determining the frequency of the source of the A.C. power;

2. producing A.C. reference timing signals, the frequency of which is a function of the frequency of the source of A.C. power, the periods of the synchronization timing signals being divisible a predetermined integral number of times by the period of the A.C. reference timing signals;

3. comparing the number of fine resolution signals produced in each synchronization period with the number of fine resolution timing signals produced in an earlier synchornization period when said predetemined integral number of A.C. timing signal is produced in each of said synchornization periods; and

4. adjusting the time at which fine resolution timing signals are produced as required to maintain substantially constant the number of fine resolution timing signals in each synchronization period at which the predetermined A.C. reference timing signal is produced in each such synchronization period.

4,583,866

WATCH DIAL AND METHOD FOR PREPARATION

Masami Kasai; Masao Kanai, and Akira Okubo, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Sep. 28, 1984, Ser. No. 655,771
Claims priority, application Japan, Sep. 29, 1983, 58-181213; Apr. 16, 1984, 59-75994
Int. Cl.[4] B05D *3/06*
U.S. Cl. 368—232 **15 Claims**

1. A watch dial comprising:

a metal base plate,

an adhesive agent comprising a mixture of hydrolytic silicon compound having an ethylenically unsaturated substituent group, hydrolytic tetra-alkoxy silane and a suitable catalytic component,

a hardened photosensitive plastic layer having uneven portions thereon embodying a surface design, letter, window, symbol, picture, or mark, said layer being on said adhesive agent, said uneven portions being formed by photopolymerization, and

a metal plating layer on the surface of said photosensitive plastic layer.

4,583,867

SELF-ENERGIZED COMMUTATION DEVICE SENSITIVE TO A TEMPERATURE GRADIENT

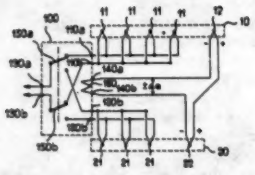
Georges Gautheret, 16, Avenue Dubonnet, 92400 Courbevoie, France

Filed Apr. 20, 1984, Ser. No. 602,601

Claims priority, application France, Apr. 21, 1983, 83 06569

Int. Cl.[4] G01K *7/02, 13/00;* **H01H** *47/00*

U.S. Cl. 374—113 **10 Claims**



1. A device for obtaining selective commutation of two electric measuring circuits (**11, 21**) to a single utilization electric circuit as a function of the temperature gradient present between two distinct points of reference, said device comprising:

a first thermocouple (**12**) placed at a first point of reference,

a second thermocouple (**22**) placed at a second point of reference, said second thermocouple being connected in opposition to said first thermocouple in a manner to deliver an electro-motive force differential, (Δe) the value and sign of which are a function of the magnitude and sense of said temperature gradient,

commutation means (**100**) responsive to said electro-motive force differential and energized solely by energy produced by said two thermocouples, said commutation means being adapted to selectively connect one or the other said measuring circuit to said utilization circuit according to the sign of said differential electro-motive force with respect to the electro-motive force corresponding to a null gradient, when the absolute value of the electromotive force differential exceeds a pre-determined threshold.

4,583,868

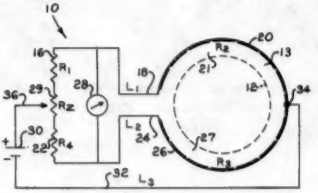
TEMPERATURE DIFFERENTIAL DETECTION DEVICE

Peter M. Girling, Allentown, Pa., assignor to International Coal Refining Company, Allentown, Pa.

Filed Oct. 3, 1983, Ser. No. 538,456

Int. Cl.[4] G01K *3/08, 7/24*

U.S. Cl. 374—114 **9 Claims**



1. In combination with a container wall, apparatus for detecting temperature changes between first and second half portions of the wall along a preselected plane comprising

(a) Wheatstone bridge circuit means, including

(1) a first circuit branch having first and second ends the first end of which is connected to said Wheatstone bridge circuit means and further including a first elongated wire element having a predetermined temperature-resistance coefficient extending in heat exchange relationship along a first half portion of the outer circumference of the container wall along a preselected plane;

(2) a second circuit branch having first and second ends the first end of which is connected to said Wheatstone bridge circuit means and further including a second elongated wire element having the same temperature-resistance coefficient as said first elongated wire element and extending in non-overlapping relationship relative to said first wire element and in heat exchange relationship along the opposing second half of the outer circumference of the container wall in said preselected plane, the temperature-resistance coefficient of said first and second wire elements being generally constant over a predetermined temperature range and said respective second ends of said first and second circuit branches being connected together at a point from which point said ends are further connected to said Wheatstone bridge circuit means;

(3) indicator means connected with said first and second circuit branches for detecting and indicating a resistance imbalance between said first and second wire elements corresponding to a temperature differential between the average temperature of the container wall first half and second half portions of the outer circumferences of the container wall; and

(4) means for adjusting said indicator means to indicate zero temperature differential when said first and second wire elements are at the same temperature; and

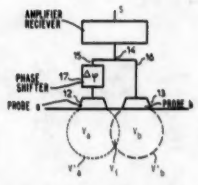
(b) connector lead means including first and second conductor leads having matching resistance values and the same temperature-resistance coefficient, said first and second conductor leads connecting said first and second wire elements with said indicator means, respectively, thereby to maintain the resistance value relationship between said first and second wire elements.

4,583,869

METHOD AND APPARATUS FOR MEASURING THE TEMPERATURE OF A BODY IN MICROWAVES

Maurice Chive; Eugène Constant; Yves Leroy; Ahmed Mamouni, all of Villeneuve D'Asco; Michèle Robillard, Lille, and Jean-Claude Van de Velde, Mons-en-Baroeul, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed May 4, 1982, Ser. No. 374,649
Claims priority, application France, May 5, 1981, 81 09281
Int. Cl.[4] G01K *1/00*; G01J *5/52*; A61N *1/40*
U.S. Cl. 374—122 15 Claims



1. Method of measuring the temperature of a selected subsurface volume of a body which comprises placing at least two probes A and B near or in contact with a surface of the body to pick up thermal noise signals in the microwave range emitted by a volume of the body associated respectively with each probe, positioning said probes adjacent one another so that the volumes of the body from which the respective probes receive thermal noise signals in the microwave range overlap one another to provide a common volume part Vi from which both of said probes receive said thermal noise signals and remaining volume parts Va and Vb, from which only the individual probes A and B respectively receive thermal noise signals in the microwave range, amplifying said signals received by said probes and correlating said signals so that thermal noise signals in the microwave range emitted by the common volume part Vi are correlated while thermal noise signals in the microwave range emitted by remaining volume parts Va and Vb are decorrelated, whereby thermal noise signals in the microwave range emitted by said common volume Vi are made preponderant by correlation with respect to thermal noise signals in the microwave range emitted by the remaining volume parts Va and Vb from which said probes A and B respectively receive thermal noise signals in the microwave range.

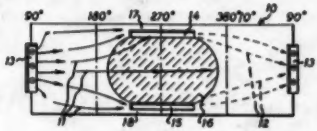
4,583,870

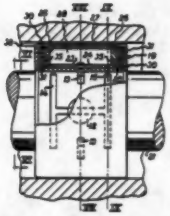
HYDRODYNAMIC BEARING UNIT

Jan R. Schnittger, Vinterbrinksägen 43, S-133 00 Saltsjöbaden, Sweden

Filed Sep. 26, 1984, Ser. No. 654,826
Claims priority, application Sweden, Sep. 29, 1983, 8305332
Int. Cl.[4] F16C *17/16*, *32/06*
U.S. Cl. 384—114 18 Claims

1. Hydrodynamic slide bearing unit having two relatively movable surfaces between which there is built up a lubricant layer, at least one load-bearing pressure zone within which the pressure during one revolution in the direction of movement will increase from an initial pressure at the frontal portion of the pressure zone to a higher pressure around the most central part of the pressure zone and decrease again to the initial pressure, said slide bearing having at least one feed opening for lubricant at or ahead of that portion of the pressure zone which is foremost in the direction of movement or flow, an outtake means for collection of lubricant at a pressure higher than the initial pressure, said lubricant being fed back via a return means to the lubricant layer through a feed opening, where the pressure difference will produce a pump effect for circulation of lubricant through the lubricant layer, wherein the outtake means comprises pressure relief openings situated downstream of the feed opening said pressure openings being elongated, and oriented so that their dimensions in the direction of movement are substantially greater than their dimensions which are transverse to the direction of movement, said elongated pressure relief openings being located on opposite sides of the pressure zone in order to relieve those portions of the bearing





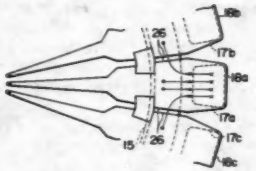
surfaces which are situated laterally outside the relief openings from the higher pressure prevailing in the hydrodynamic bearing and to eliminate the leakage flow perpendicular to the flow direction, whereby the lubricant is returned to the feed opening rather than being lost by transverse leakage from the the bearing.

4,583,871

DOT PRINTER HEAD WITH MAGNETIC CIRCUIT THROUGH ADJACENT ARMATURES

Kuniaki Ochiai; Takashi Norigoe, and Shigeo Komakine, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 556,297, Nov. 30, 1983, abandoned.
This application Apr. 24, 1985, Ser. No. 725,505
Claims priority, application Japan, Dec. 1, 1982, 57-211969
Int. Cl.[4] B41J *3/12*; H01F *27/28*
U.S. Cl. 400—124 4 Claims



1. A dot printer head comprising:
an annular yoke;
a plurality of cores disposed in an annular pattern, radially displaced from said yoke;
a plurality of coils wound around said cores;
means for providing magnetic flux in said cores such that a polarity of said flux in each said core is opposite said flux polarity in each core immediately adjacent said core; and
a plurality of armatures disposed adjacent said yoke and cores for operating a plurality of printing needles, each said armature being pivotable on said yoke about a fulcrum, said armatures being disposed such that each armature is adjacent to two neighboring armatures, wherein

each armature further comprises, on each of two sides thereof, a magnetic coupling surface opposed to the adjacent armature and spaced therefrom, said magnetic coupling surfaces on adjacent armatures being substantially parallel to each other, being sufficiently close to each other to establish effective magnetic coupling, comprising the closest approach of each armature to its neighboring armature, and being disposed immediately adjacent said yoke.

4,583,872

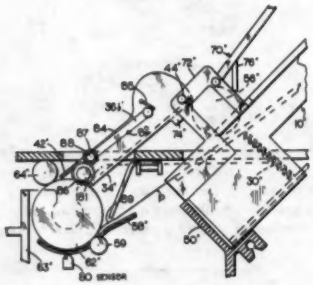
PAPER SUPPLY AND STACKING APPARATUS

Mosi Chu, Setauket; David Chiang, Dix Hills, and Solomon Manber, Sands Point, all of N.Y., assignors to MCC Associates, Bohemia, N.Y.

Continuation-in-part of Ser. No. 321,419, Nov. 16, 1981, Pat. No. 4,456,240. This application Apr. 27, 1984, Ser. No. 604,748

Int. Cl.[4] B41J *13/02*

U.S. Cl. 400—625 13 Claims



1. A paper feed, storage and collector apparatus for a printer having a print roller, a print element opposite the print roller, a paper guide for guiding a sheet of paper between the print element and print roller, and an output roller opposite the print roller and located past the print element, said paper feed, storage and collector apparatus comprising

storage means for storing a stack of paper,

means for advancing a sheet of paper from said stack to the print roller via the paper guide,

means for aligning the sheet of paper at the print roller by continuing the feed of the paper to produce a slight buckle in the paper, the now aligned sheet of paper thereafter being advanced by the print roller to a print station at which the print head performs a printing operation and thereafter the printed paper is advanced by the print roller and output rollers, and

receiver means for the printed paper comprising a pivotal take-up member movable between first and second positions and in said first position a sheet of paper can be fed from the storage means to the print roller via the paper guide and, after printing, from the print roller to the take-up member, said take-up member including a conveyor belt having an inlet end positioned adjacent the print roller with the take-up member in said first position for receiving the printed paper from the print roller, and drive means of for driving said conveyor belt with the take-up member in the first position to convey the printed paper to a receiving station of the receiver means, the position of said inlet end of said conveyor belt with the take-up member in said first position being such that the printed paper is conveyed by said conveyor belt while the printed paper is still engaged by the roller and output roller said take-up member in said second position disengages said drive means and rendering said conveyor belt inoperative and permitting manual insertion of sheets of paper to the print roller and manual retrieval of printed sheets.

4,583,873

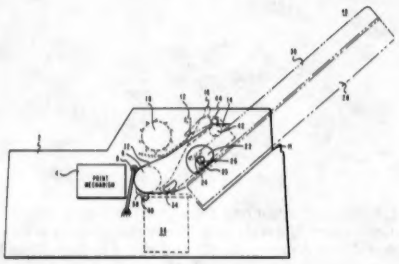
PRINTER WITH INTEGRAL PAPER HANDLING APPARATUS

Harville M. Parks, Austin; Philip W. Sobey, Georgetown, and Bilson J. Wilson, Jr., Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1984, Ser. No. 617,763

Int. Cl.[4] B41J *11/58*

U.S. Cl. 400—629 9 Claims



1. Apparatus for feeding cut sheets one at a time from a stack of sheets to a using device feed path comprising:

parallel side walls;

a selectively rotatable shaft connected between the side walls, said shaft having bearing members thereon;

sheet stack holder means removably mounted to the bearing members on the selectively rotatable shaft;

sheet separator means mounted to the shaft; and

means selectively connectable to the shaft for rotating the shaft.

4,583,874

KNOCK-TYPE PROPELLING PENCIL WITH STORAGE CARTRIDGE

Toshihiko Kageyama, Kawagoe, Japan, assignor to Kabushikikaisha Kotobuki, Kyoto, Japan

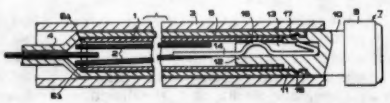
PCT No. PCT/JP82/00271, § 371 Date Dec. 13, 1982, § 102(e) Date Dec. 13, 1982, PCT Pub. No. WO83/00309, PCT Pub. Date Feb. 3, 1983

PCT Filed Jul. 16, 1982, Ser. No. 455,550

Claims priority, application Japan, Jul. 17, 1981, 56-106487[U]

Int. Cl.[4] B43K *21/00, 23/00, 31/00*

U.S. Cl. 401—85 1 Claim



1. A knock-type propelling pencil comprising:

(a) an outer cylinder;

(b) a lead cylinder slidably inserted in said outer cylinder and having a cartridge accommodation chamber in the rear portion of said lead cylinder;

(c) a lead-propelling mechanism provided at the front end of said lead cylinder;

(d) a lead cartridge comprising a cylinder, at least the rear end of which is closed by a cap, accommodated in said cartridge accommodation chamber, said lead cartridge having an outer diameter smaller than the inner diameter

of said cartridge accommodation chamber and having a tapered portion at the front edge of said lead cartridge for collecting leads remaining in said cartridge accommodation chamber;

(e) said cap including a portion having a protuberance formed on the outer peripheral surface thereof; and

(f) said lead cylinder including a recess formed along the inner peripheral surface thereof, said protuberance being tightly fitted into said recess;

(g) said cap closing the rear end of said lead cartridge being composed of a knock member and when said cartridge is inserted into said cartridge accommodation chamber, said cap is coupled to said lead cylinder to serve as a knock portion which protrudes rearwardly beyond the outer cylinder; and

(h) said cap having a mounting hole formed therein, a lead-expelling rod fitted into said mounting hole, a portion of said lead-expelling rod being bent as to protrude beyond the said mounting hole, said bent portion being brought into contact with the inner surface of said lead cartridge.

4,583,875

METHOD OF NIB ATTACHMENT

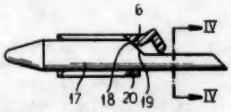
Christoph Manusch, Hanover, and Günter Scholz, Garbsen, both of Fed. Rep. of Germany, assignors to Pelikan Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,652

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1983, 3302963

Int. Cl.⁴ B43K *15/00, 8/02*

U.S. Cl. 401—133 **2 Claims**



1. A method of making a writing instrument which comprises the steps of:

forming an elongated housing having an axis, a tip at an end of said housing formed with an axial bore opening at a mouth, a reservoir for a writing medium inward of said tip, and a transversely extending imperforate membrane disposed between said bore and said reservoir extending transversely to an axis of said housing and having the shape of a cone coaxial with said axis and having an apex turned toward said reservoir;

piercing said membrane without removing material therefrom with a tool having a configuration adapted to form an opening of a predetermined size and shape while elastically deflecting a portion of said membrane radially of said axis with said apex of said cone pointing radially away from said axis upon the formation of said opening;

withdrawing said tool from said opening; and

inserting through said bore and into said opening the shank of a capillary writing nib integral with a writing tip thereof, said shank having said configuration and size with said portion bearing elastically and radially against said shank with said apex of said cone pointing radially away from said axis to retain said nib without play in said housing.

4,583,876

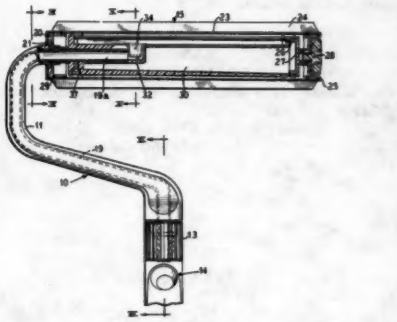
PAINT ROLLER FEEDER

Rudolf R. Karliner, Minnetonka, and Gerald E. Peterson, St. Paul, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Apr. 19, 1984, Ser. No. 602,206

Int. Cl.⁴ B05C *17/02*

U.S. Cl. 401—197 **8 Claims**



1. A paint roller assembly for a pressurized paint supply system comprising a hollow roller arm, a delivery tube within said roller arm for receiving pressurized paint therethrough, said tube extending beyond said roller arm and terminating in a horizontally disposed end portion, a circular flange mechanically coupled to said roller arm inwardly of said end portion to prevent relative rotation therebetween, an annular sealing member received over said end portion and arranged to abut said circular flange while permitting relative rotational movement therebetween, a cylindrical roller core having one end received on said end portion, said roller core having an axially extending relatively shallow groove at its periphery along a major portion of its length, said roller core being recessed at the discharge end of said end portion to provide a sump therein of greater depth than said groove and communicating with said groove, and distributor means positioned in said groove and having spaced apertures therealong to permit paint to flow from said groove through said apertures and into a perforated paint roller cover positioned along said roller core.

4,583,877

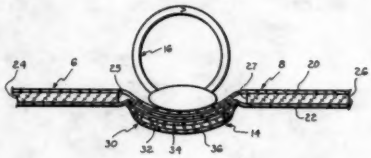
RING BINDER COVER

Robert B. Wilson, Holyoke, Mass., assignor to Dennison National Company, Holyoke, Mass.

Filed Nov. 19, 1984, Ser. No. 672,703

Int. Cl.⁴ B42F *3/00*; B42D *3/00*

U.S. Cl. 402—75 **6 Claims**



1. Ring binder construction comprising matching plies of thermoplastic outer cover sheet material superimposed in edge-to-edge relation and sealed together about their peripheral edges, inserts encased between said plies of cover sheet material and having side edges spaced apart a predetermined distance along the center portion of the cover sheet material,

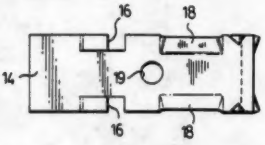
said stiffener inserts being dimensioned to define the binder's front and back cover panels, said binder having a back panel portion which includes opposed portions of the outer cover sheet material between the spaced edge portions of said inserts, a ring mechanism disposed within said binder along the back panel thereof, and a stiffening spine having a width less than said predetermined distance, said binder having flexible hinges formed by coextensive, unsealed portions of said plies of cover sheet material disposed between the outer side edges of said spine and the inner side edges of said inserts.

4,583,878

FRAMING SYSTEM

Ciro Madonia, 1470 Mississauga Rd., Mississauga, Canada (L5J 2J8)

Filed May 24, 1985, Ser. No. 737,670
Int. Cl.[4] F16B *7/04*
U.S. Cl. 403—402 **3 Claims**



1. An angle joining piece having a pair of leg portions in mutually inclined relation at a predetermined angle, for use in joining a pair of frame section members in secured angular relation with each other by insertion of said leg portions within suitably grooved portions of the sections, said leg portions each having a fulcrum portion raised from a first face surface of said leg portion for contacting a surface of said frame grooved portion, a tooth portion projecting from the opposite face of said leg portion and spaced longitudinally from said fulcrum portion, and leg locating means projecting from said first surface and spaced from said fulcrum portion and said tooth portion, for making contact with said frame section groove upon forced insertion therein so as to apply a resilient bending moment about said fulcrum portion against said tooth portion, to force said tooth portion into engaging relation with said frame section, to substantially preclude withdrawal of said joining piece from said section.

4,583,879

PAVING METHOD AND GRAB FOR USE IN SAID METHOD

Hendrik Hofman, Rotterdam, Netherlands, assignor to Aannemingsbedrijf Luymes & Bal en van der Straaten B.V., An Ridderkerk, Netherlands

Filed Jan. 17, 1984, Ser. No. 571,569
Claims priority, application Netherlands, Jan. 21, 1983, 8300230
Int. Cl.[4] E01C *19/52*
U.S. Cl. 404—73 **8 Claims**

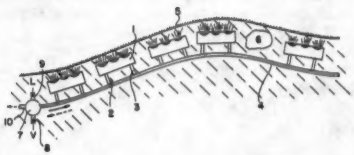
1. A method of laying paving, in particular of placing units of paving stones or bricks previously arranged in a selected pattern in a road surface, said method comprising engaging such a unit by clamping at opposite edges and putting it down on a prepared sand bed or like substrate in contiguity with previously laid road surface components while pressing the same into contact with such road surface components, and with a downward force to be exerted on the upper surface of said unit, characterized in that the downward force is exerted on at least the border stones or bricks or border rows bordering the previously laid road surface components at least at the moment when, as the unit is laid down, the clamping at the edges thereof is released.

4,583,880

CULTIVATION PLANT AND USE THEREOF

Martti W. Henttonen, Bergogatan 7, S-253 72 Helsingborg, Sweden

PCT No. PCT/SE82/00319, § 371 Date Jun. 16, 1983, § 102(e) Date Jun. 16, 1983, PCT Pub. No. WO83/01364, PCT Pub. Date Apr. 28, 1983
Continuation of Ser. No. 510,443, Jun. 16, 1983. This PCT application Oct. 6, 1982, Ser. No. 763,064
Claims priority, application Sweden, Oct. 19, 1981, 8106153
Int. Cl.[4] A01G *27/00*
U.S. Cl. 405—36 **1 Claim**



1. An irrigation system comprising several separate water accumulator bodies (1) which are buried at suitable places and at suitable mutual distances and on any level in relation to each other underneath a ground area (5) in which artificially irrigated plants are to grow, and in which each water accumulator comprises a closed container having top, bottom and side walls (11) and having at least one moisture distribution opening (12) in at least one of said top and side walls, and in which each water accumulator is filled with a porous water-soaking substrate (13), characterized in that the irrigation system comprises a main conduit (4) having means (7–10) for supply under pressure of at least one of air (9), water (8) and both water and air concurrently and having means for draining (10) said main conduit (4),

in that each water accumulator (11) is spaced above and in direct fluid communication with said main conduit (4) by at least one upwardly extending connection conduit (2, 3) and a nozzle (15) at the end of said connection conduit provided within the mass of water soaking substrate (13) and having openings in substantially all directions for finely distributing said at least one of air, water, and both air and water mixture in the water soaking substrate (13),

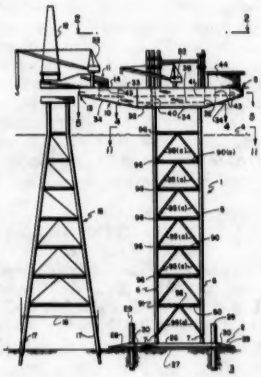
and in that each water accumulator has at least one top tube (23) extending from the interior of the water accumulator to a level at least slightly above the ground level (5), said at least one top tube (23) can be used for ventilation of the water accumulator, for blowing air and oxygen into the water accumulator from above, and for introducing a humidity sensor in the substrate (13) of the water accumulator.

4,583,881

MOBILE, OFFSHORE, JACK-UP, MARINE PLATFORM ADJUSTABLE FOR SLOPING SEA FLOOR

James E. Steele, Quakertown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 29, 1984, Ser. No. 614,585
Int. Cl.[4] E02B 17/08
U.S. Cl. 405—198 14 Claims



1. A mobile, offshore, jack-up, marine platform adjustable for sloping sea floor comprising:

(a) a mat;

(b) a tiltable column having a plurality of hollow tubular legs, each leg pivotally attached to the mat;

(i) means on at least one leg for independently vertically raising and lowering such leg with respect to the mat, to tilt the column;

(c) a jack-up work platform slidably mounted through its central portion on the column, the work platform having a pair of parallel fixed cantilevered arms extending outwardly from the central portion and a ballastable portion opposite the cantilevered arms;

(d) a skid unit movably mounted on the cantilevered arms of the work platform; and

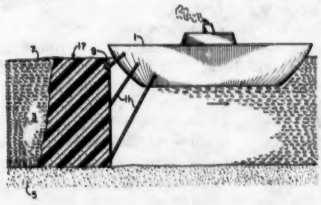
(e) a jack-up means interconnected between the work platform and each leg of the column for vertically moving the work platform with respect to the mat.

4,583,882

METHOD FOR FORMING ARTIFICIAL ISLANDS

Miklos T. Szabo, 301 Thoraberry Court Dr., Pittsburgh, Pa. 15237

Filed Feb. 1, 1984, Ser. No. 575,893
Int. Cl.[4] E02D 21/00
U.S. Cl. 405—217 19 Claims



1. A method for forming an artificial island in a body of water, said artificial island comprising a barrier which extends from the floor of the body of water to adjacent the surface of the body of water, comprising:

providing a waterborne vessel having means thereon for injecting a cross-linkable, gel-forming material, below the surface of said water;

injecting into said body of water said cross-linkable gel-forming material from said vessel, such that said cross-linkable gel-forming material will blend with the water and cross-link to form a stable cross-linkable gelled mass extending from the floor to the surface of said body of water; and

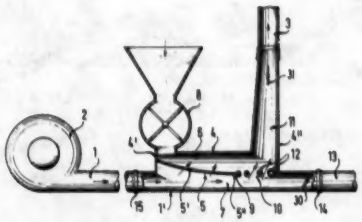
moving said vessel while continuing said injection to form a strip of said stable cross-linked gelled mass, which comprises said barrier, the bottom of which rests upon the floor of the body of water and the top of which reaches to the surface of said body of water.

4,583,883

PNEUMATIC CONVEYOR FOR GRAIN

Hermann Johanning, Melle, Fed. Rep. of Germany, assignor to Engelbrecht & Lemmerbrock GmbH & Co., Melle, Fed. Rep. of Germany

Filed May 15, 1984, Ser. No. 610,826
Claims priority, application Fed. Rep. of Germany, May 17, 1983, 3317887; Mar. 8, 1984, 3408442
Int. Cl.[4] B65G 53/40
U.S. Cl. 406—65 5 Claims



1. A pneumatic conveyor for grain having a metered supply of grain passing into a horizontal container coupled between a pressure line and a vertical conveyor tube, comprising a container defining a horizontal conveying space, said conveying space adapted to receive grain falling from a bucket wheel, said horizontal conveying space having a discharge end, said vertical conveyor having an upwardly-narrowing portion, means coupling the discharge end to said upwardly-narrowing portion, a baffle being disposed in an upper cross-section of said horizontal container, a lateral, chamber-shaped bypass, said bypass being located upstream of said pressure line, a flow tray disposed in said conveying space, said bypass lying approximately perpendicular to said horizontal container, said bucket wheel having a discharge end above said flow tray, said pressure line defining an air feed connected to said horizontal conveying space adjacent said discharge end and directing an air stream below said flow tray.

4,583,884

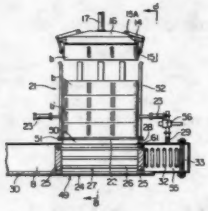
TRANSPORT APPARATUS FOR FLAT ARTICLES

Kozo Taneda, Kodaira; Masae Chiba, Kawasaki; Junichi Naka, Tokyo, and Shunichi Watanabe, Machida, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Filed Jun. 12, 1984, Ser. No. 619,871
Claims priority, application Japan, Jun. 22, 1983, 58-113175; Mar. 23, 1984, 59-55837
Int. Cl.[4] B65G 51/26
U.S. Cl. 406—73 11 Claims

1. A transport apparatus comprising a transport pipeline, a capsule slidably mounted in said pipeline for movement there-

through under the application of pressurized air, a loading means provided at a loading station of said pipeline and having a pair of openable and closable holding arms, and an unloading means provided at an unloading station of said pipeline and having a pair of openable and closable holding arms, a detachable cover plate on the pipeline at said loading station, a detachable cover plate on the pipeline at said unloading station,



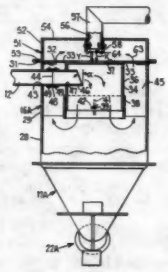
said capsule being removable from said pipeline by removing said cover plates, air chambers in the pipeline formed respectively at said loading station and said unloading station by the respective cover plates and accommodating respective buffer springs against which the capsule collides upon entering the respective loading and unloading station, to cushion such collision.

4,583,885

VACUUM RECEIVER

Charles W. Thiele, Kalamazoo, Mich., assignor to Kenntnis, Inc., Kalamazoo, Mich.

Filed Aug. 15, 1984, Ser. No. 641,133
Int. Cl.[4] B65G *53/60*
U.S. Cl. 406—168 **6 Claims**



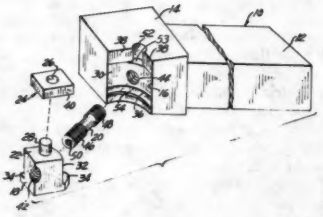
1. In a fluid conveying system having a vacuum receiver means adapted for use with a first conduit means and with a means for feeding particulate material into a fluid stream in said first conduit means and with a means for effecting a movement of said fluid stream with said particulate material therein through said first conduit means, said fluid conveying system including a collecting means for collecting particulate material removed from said fluid stream, said vacuum receiver means comprising a first tube enlarged relative to said first conduit means and into which said first conduit means extends, the axis of said first tube being vertically oriented, a second tube surrounding said first tube and of sufficiently greater girth to form an annular passage between said tubes, the length of said passage extending at least the full vertical length of said second tube, said first tube having a top wall located above the location whereat said first conduit means extends into said first tube, and means defining an opening in said first tube beneath the location whereat said first conduit means extends into said first tube and leading to said passage downstream of said location whereat said first conduit means extends into said first tube, second conduit means coaxial with said first tube and being of a smaller diameter than said first tube and terminating above said top wall, said second conduit means communicating with said second tube leading said stream from said passage at a location directly above said top wall and causing the direction of axial travel of said stream in said passage to be changed through two opposite 90° turns, said particulate material being sufficiently decelerated in said first and second tubes to become disassociated with said fluid stream, said vacuum receiver means being mounted on said collecting means, said first and second tubes being open to said collecting means to enable said collecting means to collect the material disassociated with said fluid stream, and adjustment means for varying the effective vertical spacing between the terminal end of said second conduit means and said top wall to thereby enable a varying of the velocity of said fluid stream in said passage to accommodate a specified material without causing said material to exit said second tube via said second conduit means.

4,583,886

CUTTING INSERT CLAMPING ASSEMBLY FOR CUTTING TOOL

Albert A. Drescher, 301 E. Gunn, Rochester, Mich. 48063

Continuation-in-part of Ser. No. 296,639, Aug. 27, 1981, abandoned. This application Apr. 15, 1983, Ser. No. 485,270
Int. Cl.[4] B26D *3/00;* **B23B** *29/04;* **B23C** *5/22*
U.S. Cl. 407—40 **34 Claims**



1. A cutting tool comprising a removable indexable cutting insert provided with a mounting aperture, a holder having a cut-out portion, a cutting insert support and clamping block having a surface supporting said cutting insert and an integral pin projecting from said supporting surface through said cutting insert mounting aperture, at last a pair of lateral faces of said cutting insert projecting beyond the insert supporting surface of said block, a pair of sidewall surfaces on said cut-out portion for engagement with said projecting lateral faces of said cutting insert, means for adjustably displacing said block in said cut-out portion in a direction engaging said cutting insert lateral faces with said sidewall surfaces on said cut-out portion, and means for locating said block within said holder cut-out portion and for transmitting to said holder forces applied upon said cutting insert in the course of a cutting operation effected by said cutting tool, wherein said means for displacing said block comprises a differential screw having a threaded end engaged in a threaded bore in said block and another threaded end of opposite thread engaged in a correspondingly threaded bore in said holder extending to said cut-out portion, said threaded bore in said holder being aligned with said threaded bore in said block, and wherein said means for locating said block and for transmitting to said holder forces applied upon said cutting insert in the course of a cutting operation consists of an integral tang projecting from said block and a corresponding groove in said cut-out portion adapted to receive said projecting tang, whereby a surface of said tang engages a sidewall of said groove for transmitting to said holder the forces applied upon said cutting insert in the course of a cutting operation effected by said cutting tool, and wherein said groove in said cut-out portion has a bottom sur-

face forming a cylindrical surface of predetermined radius and said cutting insert support and clamping block has a cylindrical surface from which said tang projects, the cylindrical surface of said block having a radius larger than said predetermined radius.

15. A cutting tool comprising a removable indexable cutting insert provided with a mounting aperture, a holder having a cut-out portion, a cutting insert support and clamping block having a surface supporting said cutting insert and an integral pin projecting from said supporting surface through said cutting insert mounting aperture, at least a pair of lateral faces of said cutting insert projecting beyond the insert supporting surface of said block, a pair of sidewall surfaces on said cut-out portion for engagement with said projecting lateral faces of said cutting insert, means for adjustably displacing said block in said cut-out portion in a direction engaging said cutting insert lateral faces with said sidewall surfaces on said cut-out portion, and means for locating said block within said holder cut-out portion and for transmitting to said holder forces applied upon said cutting insert in the course of a cutting operation effected by said cutting tool, wherein said means for displacing said block comprises a differential screw having a threaded end engaged in a threaded bore in said block and another threaded end of opposite thread engaged in a correspondingly threaded bore in said holder extending to said cut-out portion, said threaded bore in said holder being aligned with said threaded bore in said block, and wherein said means for locating said block and for transmitting to said holder forces applied upon said cutting insert in the course of a cutting operation consists of an integral tang projecting from said block and a corresponding groove in said cut-out portion adapted to receive said projecting tang, whereby a surface of said tang engages a sidewall of said groove for transmitting to said holder the forces applied upon said cutting insert in the course of a cutting operation effected by said cutting tool, and wherein said cut-out portion has a concave surface of generally cylindrical shape and said block has a conforming convex surface of generally cylindrical shape.

4,583,887

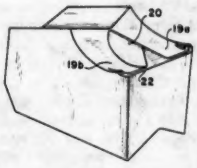
ROTARY SLOT CUTTING TOOLS

Seev Wertheimer, Nahariya, Israel, assignor to Iscar Ltd., Nahariya, Israel

Continuation of Ser. No. 205,047, Nov. 7, 1980, Pat. No. 4,417,833. This application Sep. 1, 1983, Ser. No. 496,410

Int. Cl.⁴ B26D *1/00*

U.S. Cl. 407—116 **3 Claims**



1. A cutting insert for inserting into a tool holder of a cutting tool arrangement and comprising a body having a top face, a pair of opposite side faces, a front end face, a straight line cutting edge formed at the join of said top face and said front end face; a land surface formed in said top face substantially coextensive with, parallel to and extending from said cutting edge; a chip shaping rib formed in said top face, separated from said cutting edge by said land surface and extending substantially centrally between, said opposite side faces from said land surface and away from said cutting edge, and a chip deflecting surface formed in said top surface and extending beyond said chip shaping rib towards an edge of said top surface remote from said cutting edge, the arrangement being such that during cutting operations a chip cut by said cutting edge is shaped by said chip shaping means so as to have imparted to it, by said rib, a substantially central ridge thereby resulting in the overall narrowing of the chip which is thereafter deflected by said deflecting surface.

4,583,888

CEMENTED CARBIDE DRILL BIT

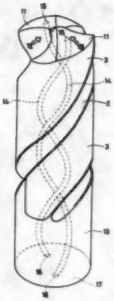
Yoshikatsu Mori; Yoshio Dohi, and Hideo Fukagawa, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 1, 1984, Ser. No. 605,879

Claims priority, application Japan, May 25, 1983, 58-93098

Int. Cl.⁴ B23B *27/10, 51/06*

U.S. Cl. 408—59 **18 Claims**



1. In a drill bit made of superhard material having a drill bit body with a drill diameter d, lands and flutes separated by said lands in said drill bit body, a shank end and a cutting end in said drill bit body, said lands having a circumferential width a, said flutes having a circumferential width b, said drill bit body having a central web with a web diameter c, a longitudinal central axis extending lengthwise through said central web, and cutting lip means, said drill diameter d defining a drill periphery, the improvement comprising a flute width ratio b to a in a range from 0.4:1 to 0.8:1, a web thickness ratio c:d in a range from 25% to 35% of said drill diameter d, a radial rake angle (θ_r) of said cutting lip means taken at positions spaced at least ¼ of said drill diameter toward said drill periphery within the range of $-5°$ to positive angular values, and a distance L from a line perpendicular to a reference line (l) connecting an outermost point (P_1) on said periphery of said cutting lip means as seen in an end view of said cutting end and a point (P_2) located inwardly relative to said point (P_1) on the cutting lip means spaced ¼ of a drill radius from said central axis, to an outermost peripheral end point (P_3) on a flute wall opposite to said cutting lip means across the respective flute, said distance L corresponding to not more than 47% of said drill diameter d.

4,583,889

JIG FOR LOCATING DRILLING HOLES IN WOOD PANELS

Regis Fallon, Noisy Le Grand, France, assignor to La Francaise Metallurgie, Paris, France

Filed Sep. 17, 1984, Ser. No. 650,878

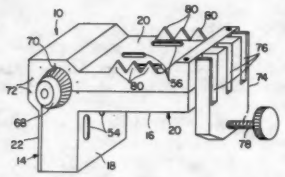
Claims priority, application France, Dec. 20, 1983, 83 20408

Int. Cl.⁴ B23B *47/28*

U.S. Cl. 408—115 R **10 Claims**

1. A jig for locating holes to be drilled in two panels, in particular wood panels, for assembling the panels at right angles to each other by means of dowels lodged in the holes, the improvement wherein the jig comprises a housing having two perpendicular branches each of which slidably receives a corresponding plate having a drilling bush passing there-

through, and a mechanism contained in said housing and having a single control means for moving the two plates in synchronism with each other as a function of the thickness of the panels.



4,583,890

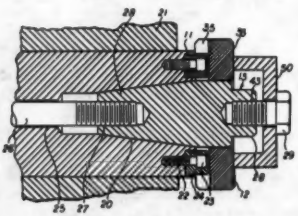
TAPER ADAPTER AND METHOD FOR MAKING SAME

Harry R. Ewing, Rte. 4, Box 31-A, Titusville, Pa. 16354, and Craig R. Ewing, 4050 Ruskin Way Apt #3, Colorado Springs, Colo. 80910

Filed Feb. 17, 1984, Ser. No. 581,263

Int. Cl.[4] B23B *29/04*

U.S. Cl. 408—239 A 15 Claims



1. In combination taper adapter for connecting a cutter supporting bar to a machine tool comprising said machine tool having a spindle nose,

a drive ring,

said taper adapter having a tapered end adapted to be received in a tapered hole in said machine tool spindle nose,

a cylindrical surface on said taper adapter at one end thereof, said drive ring having a first side and a second side,

key means on said first side of said drive ring adapted to cooperate with complementary key means on a boring bar,

said drive ring having a central hole,

said central hole receiving said cylindrical surface of said taper adapter,

and means holding said taper adapter to said cylindrical surface of said drive ring,

and circumferentially spaced holes in said adapter ring adapted to register with threaded holes in said spindle nose for mounting said drive ring on said spindle nose.

4,583,891

STRUCTURAL COMPONENT HAVING A TWISTED PROFILE AND METHOD AND APPARATUS FOR PRODUCING SUCH STRUCTURAL COMPONENT

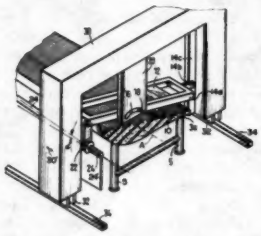
Peter Eschenfelder, Waldkraiburg, and Jörg Quentin, Munich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 436,312, Oct. 25, 1982, abandoned. This application Dec. 10, 1984, Ser. No. 680,583

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143846

Int. Cl.[4] B23C *3/18*

U.S. Cl. 409—120 5 Claims



1. A machine tool for machining a twisting separation surface forming an interface between first and second portions of a longitudinal structural component having a twisted profile or cross-section, comprising first stationary support means for holding a structural component portion having an interface surface to be machined, said structural component having a fixed longitudinal axis, second movable support means movable back and forth in the direction of said longitudinal axis, first carrier means operatively secured to said second movable support means, second carrier means operatively carried by said first carrier means for carrying a tool, first and second guide means connecting said second carrier means in a tiltable manner to said first carrier means for tilting a tool secured to said second carrier means about said longitudinal axis, said second movable support means simultaneously moving said second carrier means in the direction of said longitudinal axis of said structural component, said machine tool further comprising third guide means including a stationary guide member extending alongside said structural component portion, said stationary guide member being arranged at an angle (α) relative to a horizontal in parallel to said longitudinal axis, said third guide means further including a guide leg movable with said second carrier means, thrust bearing means movably securing an upper end of said guide leg to said second carrier means, journal means connecting a lower end of said guide leg to said stationary guide member, whereby said guide leg moves up or down in accordance with said angle (α) as said second movable support means move back and forth for tilting said second carrier means about said longitudinal axis as permitted by said thrust bearing means and by said journal means in response to a back and forth movement of said second movable support means.

4,583,892

TOOL CHANGER

Otto Armbruckner, Riederich, Fed. Rep. of Germany, assignor to Tiefbohr-Technick Gmblt & Co. KG, Fed. Rep. of Germany

Filed Feb. 4, 1983, Ser. No. 463,793

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1982, 3204789

Int. Cl.[4] B23C *1/00*

U.S. Cl. 409—136 14 Claims

1. A tool changer for receiving a deep hole drilling tool and connecting it to the spindle of a machine tool for rotation

therewith, said deep hole drilling tool being provided with an internal passage for supplying or removing, respectively, a lubricating and/or cooling liquid to or form the forward end of the deep hole drilling tool, and said spindle of the machine tool being provided with an internal passage for supplying or removing respectively, the lubricating and/or cooling liquid to or from the internal passage of the deep hole drilling tool, said tool changer comprising:

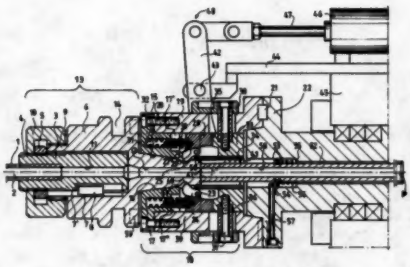
a receptacle for receiving the deep hole drilling tool for rotation therewith said receptacle being provided with a conical extension and with an internal passage extending therethrough for communicating with the internal passage of the tool, said conical extension includes an annular groove;

an adapted connected to the spindle of the machine tool for rotation therewith, said adapter being provided with an inner conical opening to receive said concial extension of said receptacle;

clutch means connected between the receptacle and the adapter for transmitting rotational movement from the adapter to the receptacle;

tube means positioned within the internal passage of the spindle, said tube means defining an internal passage;

first biasing means engageable with the tube means for biasing said tube means toward the adapter;



a series of claimping means arranged circumferentially about the adapter to surround the concial extension of the receptacle and assume a clamping position for engagement with the conical extension of the receptacle, whereby engagement of the clamping means and the conical extension of the receptacle urges the conical extension of the receptacle into the conical opening of the adapter, such that the end of the receptacle is urged into sealing engagement against the tube means in a direction opposite to the biasing force exerted by said first biasing means, and further such that the internal passage of the adapter and the internal passage of the tube means are in communication, said clamping means including a series of clamping elements pivotably disposed for engagement with the annular groove, and a series of wedge elements operatively associated with a respective one of the clamping elements; and

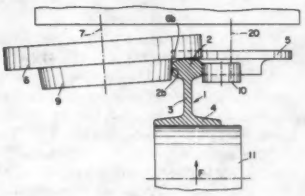
a series of second biasing means, each of which acts individually on one of said clamping means to hold its respective clamping means in engagement with said concial extension of said receptacle wherein said wedge elements are urged by a respective one of said second biasing means to produce a self-locking effect of its respective clamping element.

4,583,893

REPROFILING DEVICE FOR RAILS THROUGH CONTINUOUS MILLING

Henri B. Liné, Roquefort les Pins, France, assignor to Matix Industries (Societe Anonyme), Paris, France

Filed May 8, 1984, Ser. No. 608,235
Int. Cl.[4] E01B *31/13*
U.S. Cl. 409—138 **9 Claims**



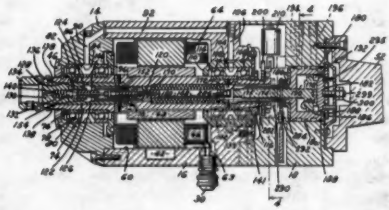
1. Device for reprofiling rails by continuous milling, comprising a support member linearly displaceable with respect to a fixed or movable rail, a milling tool rotatably mounted on said support member, reference guiding means of the cutting depth of the tool located before said tool in the direction of displacement comprising a plate rotatably mounted on a shaft extending vertically or slightly inclined with respect to the vertical and fixed to the support member, said plate bearing on the upper face of the rolling path of the rail along a plane tangent to the rail head; and a conical roller for bearing on the lateral face of the rolling path of the rail opposite the face cut by the milling tool, along a plane tangent to the lateral face, said plate and said conical roller being rotatably mounted on the same said shaft.

4,583,894

HIGH SPEED MOTORIZED SPINDLE WITH TOOL CLAMPING/UNCLAMPING MECHANISM

William A. Mitchell, Springfield, Vt., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jul. 2, 1984, Ser. No. 627,323
Int. Cl.[4] B23B *5/26*
U.S. Cl. 409—233 **23 Claims**



1. A spindle comprising a housing, a hollow tool-driving shaft rotatably mounted in the housing, tool clamp means slidably disposed in the hollow tool-driving shaft slidable in one direction to grip a tool and in the other direction to release the tool, actuating means in the housing for sliding the tool clamp means in said one direction to grip the tool and in the other direction to release it, said actuating means including piston means slidably disposed in the housing with a portion of said piston means extending inside the tool-driving shaft for sliding the tool clamp means in said tool-driving shaft in said other direction for tool release, said portion having cam means thereon, means for actuating said piston means, means in the tool-driving shaft biasing the tool clamp means in said one

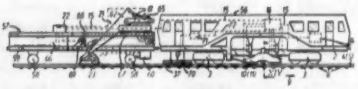
direction to grip a tool when said piston means slides in said other direction, and shaft clamping means disposed inside the tool-driving shaft with a portion thereof in the path of said cam means of said piston means so that said cam means moves the shaft clamping means into clamping engagement with the tool-driving shaft from inside the tool-driving shaft when the piston means is slid to cause tool release for preventing movement of the tool-driving shaft from tool release forces.

4,583,895

MOBILE MACHINE FOR REMOVING SURFACE IRREGULARITIES FROM A RAIL HEAD OF A RAILROAD TRACK

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H, Vienna, Austria

Division of Ser. No. 151,122, May 19, 1980, Pat. No. 4,372,714.
This application Oct. 30, 1981, Ser. No. 316,838
Claims priority, application Austria, Jan. 17, 1980, 248/80
The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.
Int. Cl.[4] B23D *1/20*; E01B *31/15*
U.S. Cl. 409—295 **7 Claims**



1. A mobile rail planing machine mounted on a railroad track for continuous movement in an operating direction, the track including two rails each having a rail head defining a gage side, a field side and a running surface, the gage and field sides extending from the running surface to a lower edge of the rail head, the machine being arranged for continuously removing such surface irregularities as ripples, corrugations and overflow metal during the continuous movement and comprising

(a) a frame running on the track on undercarriages having flanged wheels engaging the gage and field sides in a zone adjacent the running surface,

(b) a rail planing tool mounting linked to the machine frame in association with each rail,

(1) the mountings being in substantial alignment in a direction extending transversely to the rails,

(c) transversely extending spacing members linking the mountings to each other,

(d) hydraulic drives for continuously adjusting the spacing members and the mountings linked thereto to the track gage,

(e) hydraulic drive means for vertically adjusting the mountings relative to the running surface of the rail head of the associated rail and for pressing the mountings thereagainst,

(f) guide roller means for vertically and laterally guiding the mountings along th rail heads of the associated rails, the guide roller means including

(1) two guide rollers laterally guiding each mounting without play along a selected one of the sides of the rail head of the associated rail and engaging the selected rail head side in a region extending from the lower edge to below the zone adjacent the running surface, and

(2) a plurality of additional guide rollers vertically guiding each mounting along the running surface of the rail head of the associated rail, the additional guide rollers engaging the running surface and each having an axis extending substantially parallel to the track plane,

(g) a tool head including a tool holder, the tool head being mounted centrally between the guide rollers and for displacement in relation to the mounting in planes parallel to the track plane and to a vertical plane passing through the associated rail and the tool holder including clamping means,

(h) further hydraulic drives connected to each tool head for displacing the same in said planes,

(i) a rail planing tool replaceably mounted in the clamping means of the tool holder, thetool holder detachably carrying

(1) a cutting blade having a cutting edge for planing chips or shavings off the rail head to obtain a selected rail head configuration, and

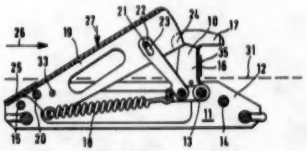
(j) means for removing the chips or shavings.

4,583,896

LOCKING AND RESTRAINING CARGO IN AN AIRCRAFT

Günter Vogg, Bremen; Hartmut Sempert, Delmenhorst, and Wilfried Eilenstein, Stuhr, all of Fed. Rep. of Germany, assignors to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,415
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1982, 3222202
Int. Cl.[4] B60P *1/64*; B64C *1/22*
U.S. Cl. 410—69 **10 Claims**



1. A locking dog for restraining cargo in the cargo space of aircraft comprising:

a frame for connection to bottom structure of the aircraft cargo space;

a locking member with a hook and nose-like projection pivoted on the frame about a first pivot axis, pivoting permitting an upright position of the locking member as well as a fold down position;

an actuator flap pivoted on the frame about a second pivot axis, being spaced from the first pivot axis and provided for pivoting to assume an upwardly stationary extended position and into a retracted and fold down position;

bar means pivotally linked to the locking member eccentrically to the first pivot axis, the bar means being articulated to the actuator flap at a point of articulation; and

tension spring means connected to the actuator flap and to the locking member at connect points eccentric to the first and second pivot axes, so that a dead center position is defined as said point of articulation at the bar means and the actuator flap which point of articulation may pass the dead center position while the actuator flap is pushed down whereupon the spring means tends to hold the locking member in a retracted position while tending to place the locking member into an upright locking position as long as said point of articulation has not passed the dead center position.

4,583,897

ANNULAR DOVETAIL HEAD FASTENER

Franklin S. Briles, 2640 Vista Pacific Dr., Oceanside, Calif. 92056-3599

Filed Mar. 19, 1984, Ser. No. 590,831
Int. Cl.[4] F16B *35/00*
U.S. Cl. 411—378 **15 Claims**

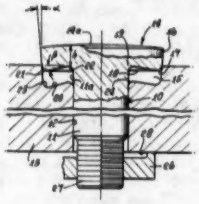
1. In combination, a fastener having a shank received in a work bore, and a head received in work counterbore, the

shank extending in an axial direction rearwardly from the head, the improvement comprising

(a) the head having an annular side wall received in said counterbore,

(b) the head having a front end wall, and a rear wall that tapers radially outwardly and rearwardly, the rear wall spaced rearwardly from said front wall for engagement with a work surface that also tapers radially outwardly and rearwardly,

(c) and including said work, the work having a first preformed counterbore facing the side wall of the head and extending parallel thereto, and a second counterbore which comprises said work surface that tapers radially outwardly and rearwardly and extends parallel to the



head rear wall, the head rear wall engaging said work second counterbore surface, the work having an outer surface, and the perimeter of the head front wall being substantially flush with the work outer surface,

(d) the head side wall tapering rearwardly and having tapered angularity between 0° and 15°,

(e) the head rear wall having frusto-conical tapered angularity, relative to a plane normal to said axis, between 1° and 22°, and between loci closely proximate said shank and proximate said side wall,

(f) the head rear wall merging convexly and annularly with the head side wall, the head thickness gradually and progressively diminishing radially inwardly from the locus of said convex merging to said locus proximate the shank which locus is annularly concave.

4,583,898

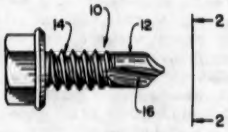
DRILL SCREW AND CUTTERS FOR MAKING SAME

Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 97,460, Nov. 26, 1979, abandoned. This application Mar. 15, 1983, Ser. No. 473,524

Int. Cl.[4] F16B *25/00*

U.S. Cl. 411—387 **7 Claims**



1. A milled self-drilling fastener having a drilling tip at one end of the fastener shank, said tip comprising a pair of flutes extending at equal opposite angles with respect to the axis of said fastener lying generally on opposite sides thereof, a pair of heel portions extending intermediate said flutes, said heel portion intersecting to define a narrow chisel edge, said heel portions having convex curvature in a direction perpendicular to said chisel edge, and substantially no curvature in a direction parallel to said chisel edge, said flute defining a cutting edge and a drag surface, said heel portions being configured in substantially immediately increasing cross-sections in planes parallel to the axis of the fastener as distance along said planes from said axis increases thereby buttressing said cutting edge and enhancing resistance of said tip to breaking during drilling, each said flute having a compound configuration formed by a flat surface section extending inwardly from the outer edge of the shank and intersecting at least a portion of the cutting edge and a curved section including at least said drag surface, said curved section having a substantially uniform radius of curvature in a plane perpendicular to the axis of the flute.

4,583,899

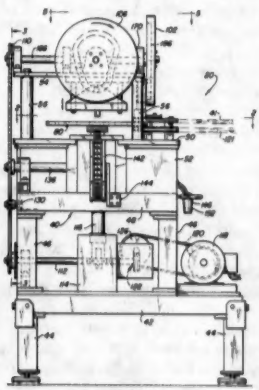
APPARATUS FOR INSERTING POURING SPOUTS INTO CONTAINER TOPS

Frederick A. Plaessmann, Edison, N.J., assignor to Seal Spout Corporation, Liberty Corner, N.J.

Filed Mar. 6, 1984, Ser. No. 586,862

Int. Cl.[4] B21D *51/00*

U.S. Cl. 413—53 **5 Claims**



1. A machine for inserting pouring spouts into container tops comprising:

inlet means to bring a supply of caps for processing;

exit means to allow passage from the apparatus of caps with inserted spouts;

spout inserting means;

indexing means to carry the tops from the inlet means to the spout inserting means and then to the exit means;

said indexing means including receptacle means in said indexing means to receive and secure the tops mounted in the indexing means;

mounting means to mount the tops in the indexing means;

ejecting means to eject the tops with inserted spouts from the receptacle of the indexing means;

means to sequentially feed caps to said mounting means;

said indexing means comprising an indexing table;

said inlet means comprising an inlet ramp;

said exit means comprising an exit ramp;

said drive means comprising a drive and power transmission means;

access means in said exit ramp comprising;

a separate segment including a top and side wall;

pivot means connecting said separate segment to said exit ramp;

holding means to hold said separate segment in proper relation to said exit ramp; and

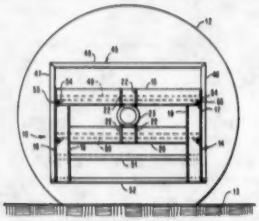
fixing means to fix said segment to said holding means.

4,583,900

ROUND HAY BALE HANDLING APPARATUS HAVING AT LEAST ONE SCREW SPEAR

Nickolas A. Cooley, Coal Run Village P.O. Box 2286, Pikeville, Ky. 41501

Filed Feb. 4, 1985, Ser. No. 697,798
Int. Cl.[4] A01D *87/12*
U.S. Cl. 414—24.5 16 Claims



1. A round hay bale handling apparatus including:

a frame for attachment to transport means or the like movable along the ground in a substantially horizontal direction;

at least one screw spear;

said frame having means to rotatably support said screw spear so that said screw spear extends substantially perpendicular to said frame;

said rotatably support means being fixed to said frame and extending beyond said frame on the opposite side to that from which said screw spear extends from said frame; and

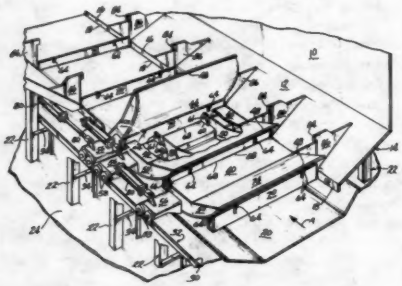
rotating means supported solely by said rotatably support means to selectively rotate said screw spear in each direction to advance said screw spear with said screw spear substantially horizontal into a round hay bale until said frame engages the round hay bale as said frame is advanced in a substantially horizontal direction towards the round hay bale and to withdraw said screw spear from a round hay bale into which said screw spear has been advanced as said frame is moved away from the round hay bale in a substantially horizontal direction.

4,583,901

GATES FOR SELF UNLOADING VESSELS

Vaughan Tyrer, St. Catharines, Canada, assignor to ULS International Inc., Toronto, Canada

Filed Jun. 6, 1984, Ser. No. 617,933
Int. Cl.[4] B65G *65/70*
U.S. Cl. 414—144 30 Claims



1. Apparatus for handling particulate material comprising:

wall structure including hopper walls having an axially elongated throat opening therein for the discharge of said particulate material therethrough;

an axially aligned track supported from said wall structure;

at least one gate for closing at least a portion of said throat opening;

means movable along said track supporting said gate therefrom adjacent one end thereof;

means supporting the other end of said gate whereby as said one end is moved in a direction to open said gate, the other end moves upwardly above the level of said throat opening, and

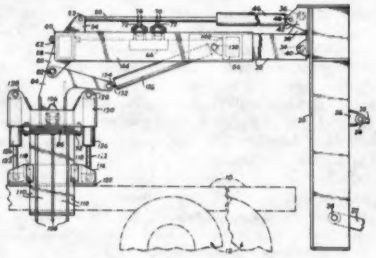
means for moving said gate between open and closed positions.

4,583,902

METHOD AND SYSTEM FOR STORING WHEELED FRAMES OF DETACHABLE CARGO CONTAINER TYPE TRAILERS

Joseph L. Riley, Milwaukie, Oreg., assignor to Scott S. Corbett, Jr. and Lynn F. Perrott, both of Portland, Oreg.

Continuation of Ser. No. 378,811, May 17, 1982, abandoned, which is a continuation of Ser. No. 69,563, Aug. 24, 1979, abandoned. This application Jan. 30, 1984, Ser. No. 574,985
The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.
Int. Cl.[4] B66F *9/18*
U.S. Cl. 414—261 7 Claims



1. A storage system for the elongated wheeled frame of a trailer of the detachable cargo container type, wherein the trailer frame has a top container-supporting surface, a bottom surface opposite said top surface, a pair of laterally spaced elongated outer sides and longitudinally spaced front and rear ends, and the wheels are supported adjacent the rear end of the frame, the storage system comprising:

(a) a mobile vehicle,

(b) carrying means mounted on the mobile vehicle and including:

(1) a pair of power operated clamp jaw members movable one toward and away from the other to a clamping position closely adjacent each other for releasably clamping between them the said top container-supporting surface and the opposite bottom surface of a trailer frame at least in areas adjacent both laterally spaced sides thereof forwardly of the wheels, and

(2)power operated means mounting the clamp jaw members for movement relative to the mobile vehicle for moving a clamped wheeled trailer frame from its normal ground-supported horizontal position first to a position raised above ground, then to a substantially vertically extending position with its front end extending upwardly and its rear end elevated above ground for transport, then from the vertically extending raised position downwardly to a vertically extending lowered position for resting the frame upon its rear end in storage, and for moving a clamped wheeled trailer frame from its vertically extending lowered position in storage first to a vertically extending position with its rear end elevated above ground, then to a substantially horizon-

tally extending position raised above ground, and then to a lowered substantially horizontally extending position with its wheels resting upon the ground, and

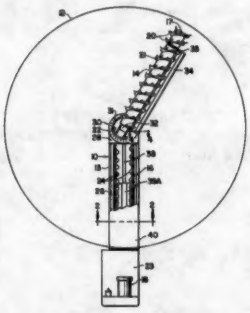
(c) storage compartment means arranged for removably receiving and retaining a wheeled trailer frame delivered to it by the vehicle-mounted carrying means in said vertically extending position for resting the frame in storage condition upon its rear end.

4,583,903

APPARATUS FOR BOTTOM UNLOADING OF STORAGE STRUCTURES

Marion E. Hutchison, Waterloo, Iowa, assignor to Tiger Industries, Inc., Waterloo, Iowa

Filed Jan. 3, 1984, Ser. No. 567,898
Int. Cl.[4] B65G *65/46*
U.S. Cl. 414—311 28 Claims



1. Apparatus for unloading bulk material from a centrally located opening in the floor of a generally cylindrical storage structure, said apparatus comprising:

(a) a sweep arm comprising an auger which is adapted to extend radially from said central opening to a point near the wall of said structure, said sweep arm being adapted to dislodge and transport said material from said storage structure to said opening; wherein said sweep arm is adapted to pivot about said central opening;

(b) conveyor means operatively associated with said sweep arm and having a portion adapted to be disposed beneath said central opening; wherein said conveyor means is adapted to convey said material from said opening to a point beyond the wall of said storage structure;

(c) a power source adapted to power said sweep arm and said conveyor means; and

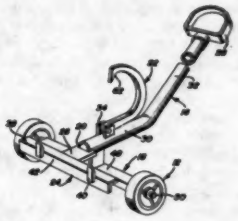
(d) ratchet advancement means at the inner end of said sweep arm adapted to pivot said sweep arm about said central opening in such a manner that successive amounts of said bulk material are dislodged and transported to said opening; wherein said ratchet advancement means comprises (i) a ratchet ring to which the inner end of said sweep arm is attached, wherein said ratchet ring includes engagement means spaced therearound, (ii) pawl means including a finger which is adapted to engage said engagement means when said pawl means is moved in a first direction and is further adapted to disengage said engagement means when said pawl means is moved in a second direction, wherein said pawl means extends from said ratchet ring to the wall of said storage structure; and (iii) reciprocating means adapted to move said pawl means alternatively in said first and second directions; wherein said reciprocating means is located externally of said storage structure.

4,583,904

FIREWOOD HANDLER

Foy J. Maxwell, Box 863, Hendersonville, N.C. 28793

Filed May 31, 1984, Ser. No. 615,540
Int. Cl.[4] B65G *7/12*
U.S. Cl. 414—453 4 Claims



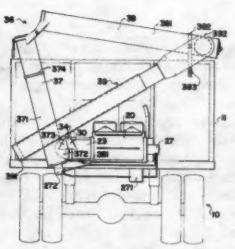
1. A firewood handler, comprising an elongated frame having forward and rearward portions extending in obtuse angular relation to each other, and a handle connected to the rearward portion of the frame, the improvement comprising a connecting web depending from the forward portion of the frame, a support element connected to the web in spaced relation to the frame and extending transversely thereof, wheel means mounted on the support element for ground support of the forward portion of the frame, a load lift element, spacing means connected to the forward portion of the frame and extending forwardly therefrom for support of the load lift element in parallel spaced relation to the support element, at least two braces interconnected between the support and load lift elements adjacent to said wheel means, at least two log engaging jaws fixed to the load lift element, a hook having a curved section and a straight section substantially tangential to the curved section, a log gripping jaw fixed to the curved section of the hook, and means pivotally mounting the straight section of the hook on the forward portion of the frame for displacement of the hook in substantially coplanar relation to the web between a retracted position resting above the forward portion of the frame and a load gripping position.

4,583,905

AUGER APPARATUS FOR DISCHARGING MATERIAL FROM A TRUCK BOX

Mike Scherr, General Delivery, Unity, Saskatchewan, Canada

Filed Jun. 4, 1984, Ser. No. 616,710
Int. Cl.[4] B60P *1/04*
U.S. Cl. 414—505 3 Claims



1. Apparatus for discharging material from the tail gate of a truck box for delivery at ground level and at high level as a drill fill comprising a first auger, means for mounting the first auger on the tail gate, so as to extend therefrom in horizontal orientation across a rear face of the tail gate, the first auger having a length such that it extends only across a central discharge portion of the tail gate and terminates at an open mouth

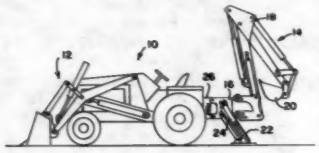
substantially adjacent one side edge of the discharge portion of the tail gate, hydraulic drive motor means for driving the first auger to discharge material from the truck box to the open mouth, a second auger, cooperating pivot coupling means having a part on said first auger and a part on said second auger for detachably coupling the second auger to the first auger so as to extend therefrom in the horizontal orientation to deliver material discharged from the truck at ground level, the length of the second auger being such that it extends from the open mouth to a position just beyond the side edge of the truck box, said coupling means being arranged whereby the second auger can be folded back over the first auger, said second auger including drive engaging means for engaging said first auger whereby drive from said first auger is communicated to said second auger, a third auger separate and distinct from said second auger, coupling means on said third auger for detachably coupling the third auger to the part of the coupling means on the first auger in the place of the second auger with said second auger removed, the third auger forming a drill fill to transport discharged material from said first auger to a high level for discharge, said third auger comprising a first portion for extending upwardly and outwardly from said open mouth to a first upper rear corner of said truck box, a second portion pivotally coupled to the first portion and movable from a working position aligned with and driven by the first portion to a transport position inclined tranverseley thereto to a second upper rear corner opposite to said first rear corner of the truck box, and a discharge spout pivotally mounted on an end of said second portion remote from said first portion so as to be movable in said tranport position to a position inclined transversely and downwardly of said truck box to a lower rear corner below said first upper rear corner and hydraulic drive motor means for driving said third auger at an end thereof adjacent the open mouth of the first auger.

4,583,906

HYDRAULIC BACKHOE LATCH MECHANISM

Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jun. 28, 1984, Ser. No. 625,542
Int. Cl.[4] E02F 3/34
U.S. Cl. 414—686 **4 Claims**



1. A hydraulic latch mechanism for connecting a backhoe having a frame to a material handling implement, comprising:

upper pivot means pivotally connecting said backhoe frame and said implement for movement of said backhoe relative to said implement about a horizontal axis;

latch means movably mounted on said implement for movement between engaged and disengaged positions;

latch pin means mounted on said backhoe frame for cooperation with said latch means, whereby in said engaged position of said latch means said latch pin means is adapted to be retained by said latch means and said backhoe is held against movement with respect to said implement, and in the disengaged position of said latch means said latch pin means is released from said latch means and said backhoe is movable about said horizontal axis relative to said implement; and

hydraulic latch motor means operatively connected to said latch means for selectively moving said latch means between said engaged and disengaged positions;

said latch means defining a generally wedge-shaped opening at one end for receiving said latch pin means in the engaged position of said latch means, said wedge-shaped opening cooperating with said latch pin means for effecting a gripping action to minimize movement of said backhoe relative to said implement when said latch pin means is retained by said latch means;

said latch means being pivotally movably mounted on said implement by latch pivot pin means mounted on one of said latch means and said implement, the other of said implement and said latch means defining another wedge-shaped opening through which said pivot pin means is received for pivotal mounting of said latch means, said another wedge-shaped opening cooperating with said pivot pin means for effecting a gripping action to further minimize movement of said backhoe relative to said implement when said latch pin means is retained by said latch means;

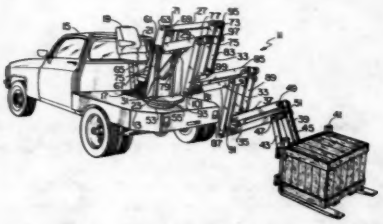
said latch means defining stop means (40) engagable by said latch pin means in the disengaged position of said latch means, whereby said latch pin means is positioned by said stop means for retention by said latch means as said latch means is moved from said disengaged position to said engaged position.

4,583,907

EXTENSIBLE APPARATUS

Ronald J. Wimberley, P.O. Box 3000 F, Harbor, Oreg. 97415

Filed May 18, 1984, Ser. No. 611,732
Int. Cl.[4] E02F 3/34
U.S. Cl. 414—718 **36 Claims**



1. An extensible apparatus adaptable for employing an end-use work tool for one of multiple purposes and comprising:

a. a base;

b. a main support structure fixedly connected with said base;

c. pivotally mounted support structure pivotedly mounted on said main support structure and having an angle of support for cantilevered structural levers and booms;

d. a first extensible means for pivoting said pivotally mounted support structure so as to change its said angle of support; said first extensible means being connected with said support structure and said pivotally mounted support structure;

e. at least one pair of respective first boom and first lever having their respective near ends pivotally connected with said support structure such that pivoting of said pivotally mounted support structure changes the relative positions of said respective near ends so as to effect said angle of support; said first boom having a remote lever pivot point adjacent its remote end for connection with a subsequent lever; said first lever having a remote lever pivot point for connection with an intermediate fulcrum point of a subsequent lever and having intermediate said near-end and said remote end pivot point an intermediate boom pivot point connection for connection with a subsequent boom;

f. a plurality of extension units connected with said first boom and lever, each said extension unit comprising a next lever and next parallel boom; the boom being pivot-

ally connected at its near end with the respective boom pivot point of the immediately preceding lever and near the remote end thereof, and having a remote lever pivot point that is pivotally connected at its remote end with the respective near end of the next connected lever; the next lever being pivotally connected at its near end with the remote end of the respective immediately preceding boom, having a near lever pivot point that is connected to the remote end of the immediately preceding lever, having a remote boom pivot point that is connected to the respective next boom and a remote lever pivot point that is connected to the next succeeding lever, the sequential levers following the first lever having substantially the same length between a near end pinning point, to near lever pivot point, to remote boom pivot point, to remote end lever pivot point and wherein all booms exclusive of said first boom have substantially the same length between the near end pinning point and the remote end pinning point, the remote end of all levers at the remote end lever pivot point being maintained nearer to the work tool at all positions than the near end pivot point of the same lever and nearer to the work tool than the boom pivot points on the levers; whereby load leverage moments are equalized at all pnning points; whereby lockup of extensible apparatus is prevented; and warehousing and assembly are facilitated;

g. a second extensible means for changing angles of said first boom and first lever with respect to said pivotally mounted support structure;

h. an ultimate lever having a near end connected with said remote lever pivot point of the preceding boom, having a remote end work tool pivot connection point for connections with the work tool and having an intermediate fulcrum pivot point connected with said remote lever pivot point of the preceding lever;

i. An ultimate boom having a near end pivotally connected with said intermediate boom pivot point of an immediately preceding lever and having a remote end work tool pivot connection point for connection with the work tool; and

j. means for connecting the work tool with said remote ends of said ultimate boom and lever.

4,583,908

MOBILE DEVICE FOR HANDLING MATERIAL

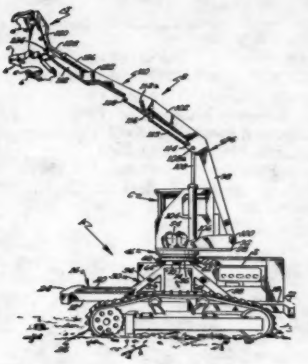
Patrick J. Crawford, 1013 S. Lincoln St., Shawano, Wis. 54166

Continuation of Ser. No. 538,840, Oct. 5, 1983, abandoned, which is a continuation of Ser. No. 369,859, Apr. 19, 1982, abandoned, which is a continuation of Ser. No. 123,270, Feb. 12, 1980, Pat. No. 4,326,571. This application Dec. 21, 1984, Ser. No. 684,985

Int. Cl.[4] B66D *3/00*

U.S. Cl. 414—694 **19 Claims**

1. Device for handling material comprising, in combination: a frame having a first frame axis and a second frame axis which is perpendicular to the first frame axis; a base portion; a rotatable platform rotatably mounted relative to the base portion about a turntable pivot axis; means for rotating the platform relative to the base portion about the turntable pivot axis, with the base portion and the rotatable platform forming a turntable assembly; means for handling material operatively attached to the rotatable platform of the turntable assembly; means for pivotally mounting the base portion to the frame about a base portion pivot axis which is parallel to the second frame axis; means for pivoting the base portion about the base portion pivot axis, with the frame having a shape complementary to and for pivotal receipt of the base portion in a non-interfering manner allowing the base portion to be pivoted by the base portion pivoting means in the range of 30 degrees without the turntable assembly and the material handling means interfering with the frame, wherein the material handling means can be positioned relative to the material by pivoting the rotatable platform about the turntable pivot axis by the platform rotating



means and/or by pivoting the base portion about the base portion pivot axis by the base portion pivoting means

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4,583,909

INDUSTRIAL ROBOT

Kazuichi Yamashita, Kyoto; Toshio Saito, Kobe; Keiichi Zin, and Yoshiro Takemoto, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

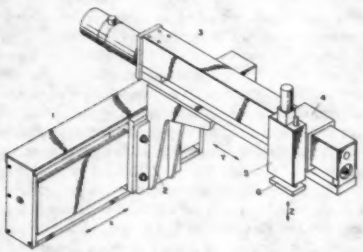
PCT No. PCT/JP83/00141, § 371 Date Jan. 11, 1984, § 102(e) Date Jan. 11, 1984, PCT Pub. No. WO83/03995, PCT Pub. Date Nov. 24, 1983

PCT Filed May 12, 1983, Ser. No. 574,096

Claims priority, application Japan, May 12, 1982, 57-80452

Int. Cl.[4] B66F *11/00*; B25J *11/00*

U.S. Cl. 414—749 **3 Claims**



1. An industrial robot comprising:

at least two units each having an elongated housing, at least one guide mounted in said housing extending along the length thereof, a movable block mounted for movement along said guide, a driving means connected to said movable block for driving said block reciprocally along said guide means, a side wall of said casing having at least one slot therealong parallel to said guide means, and a mounting plate having means extending through said slot for mounting on said movable block and having a lateral mounting surface parallel to the direction of movement of said mounting block; and

a mounting means having two mounting surfaces thereon which are orthogonal to each other, one connected to the lateral mounting surface of said mounting plate of one of said units, and the casing of the other unit having a wall

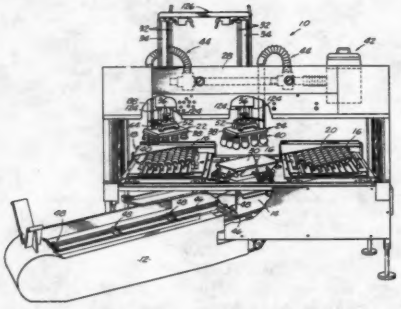
other than the said side wall mounted on the other orthogonal surface of said mounting means with the guide in said other unit extending orthogonally to the guide in said one unit.

4,583,910

VACUUM APPARATUS FOR TRANSFERRING ROUND FOOD ARTICLES

Bradley N. Borgman, Riverside; Jerry W. Cramer, Upland, and Don E. Dossey, Montclair, all of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Jan. 12, 1984, Ser. No. 570,265
Int. Cl.[4] B66F *11/00*
U.S. Cl. 414—752 **21 Claims**



1. In apparatus including movable pick-up heads for picking up and transferring layers of round food articles subject to surface irregularities, the improvement comprising,

a manifold having an open interior and defining multiple openings arranged in a generally rectangular pattern and in common communication with said open interior of said manifold,

pump means in communication with said open interior of said manifold for developing relatively low vacuum, high flow rate conditions adjacent each of said openings, and

vacuum cups mounted respectively in said openings, said vacuum cups each being of bellows-like construction and formed from flexible material to permit expansion and contraction along their axes, said vacuum cups each being formed with means for attachment in one of said manifold openings, said vacuum cups each having a flexible base portion providing an opening for sealing engagement with the round food articles, said vacuum cups also each including means forming a relatively large orifice for permitting relatively unrestricted communication between said flexible base portions and said open interior of said manifold whereby the high flow rate conditions in said manifold rapidly and simultaneously develop vacuum conditions in all of said vacuum cups upon engagement of said cups with the round food articles to cause food articles generally corresponding in number to said vacuum cups to simultaneously adhere to said vacuum cups,

said flexible base portions forming frusto-spherical seal surfaces for engagement with the fruit units,

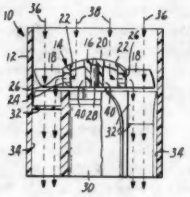
said bellows-like portions of said vacuum cups being formed from resilient material having a shore hardness selected to facilitate axial expansion and contraction of said bellows-like construction while resisting radial collapse of said bellows-like vacuum cups, said flexible base portions of said vacuum cups which form said frusto-spherical seal surfaces being formed from resilient material having a relatively lower shore hardness in order to further facilitate sealing engagement of siad seal surfaces with the fruit units and to facilitate the shedding of wax build-up on said seal surfaces.

4,583,911

MULTIPLE FLUID PATHWAY ENERGY CONVERTER

David L. Braun, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 24, 1983, Ser. No. 544,822
Int. Cl.[4] F04D *5/00*
U.S. Cl. 415—116 **18 Claims**



1. An axial flow fan, comprising:

a tubular shroud defining a fluid pathway coaxial with said shroud;

a motor mounted within said fluid pathway coaxial with said shroud, said motor having a rotatable drive shaft;

a hub mounted to said shaft of said motor, said hub having a face across said fluid pathway and having an edge at the radial perimeter of said hub;

a plurality of blades of uniform cross-section mounted radially to said hub, each of said plurality of blades set with an attack angle with respect to said fluid pathway; and

a set of guide vanes disposed axially with respect to said plurality of blades and mounted within said fluid pathway;

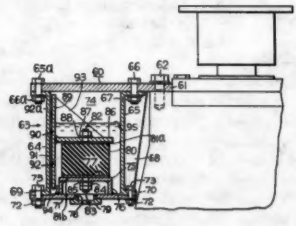
said hub having at least one face orifice in said face of said hub communicating with at least one edge orifice in said edge of said hub, said at least one edge orifice being located between two adjacent of said pluality of blades, allowing fluid flow through said hub, to operate in conjunction with said at least one of said plurality of blades and said set of guide vanes to provide increased efficiency of said axial flow fan.

4,583,912

DAMPED DYNAMIC VIBRATION ABSORBER

James H. Ball; Pradip N. Sheth, and Keith E. Rouch, all of Milwaukee, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 16, 1984, Ser. No. 590,413
Int. Cl.[4] F04D *29/66*
U.S. Cl. 415—119 **16 Claims**



1. A combination comprising:

a pump installation having a pump comprising an impeller secured to a pump shaft for rotation about axis of rotation;

a housing surrounding said impeller and having a fluid inlet and fluid outlet;

a plurality of bearings carried by said housing with said pump shaft journaled within said bearings;

means for connecting said housing to a foundation;

said pump generating a disturbing force having a periodic component normal to said shaft at a frequency proportional to the rotational velocity of said shaft and generating a resultant periodic force normal to a portion of said pump with said portion experiencing a periodic lateral displacement relative to said foundation in response to said resultant force;

a vibration absorber having a plurality of distinct elastic means secured to said pump for permitting lateral elastic movement of a portion of said elastic means relative to said pump;

independent inertia means secured to said portion for lateral movement therewith;

energy dissipative means for damping movement of said inertia means relative to said pump;

said elastic means, inertia means and energy dissipative means each having, respectively, a preselected stiffness, mass and damping ratio sufficient for said absorber to generate a periodic compensation force acting on said portion out of phase with said disturbing force to attenuate the periodic displacement of said portion wherein said elastic means comprises a plurality of elastic members and means for rigidly securing said elastic members to said apparatus with said elastic members arranged around said apparatus in a plane generally normal to said axis of rotation,

wherein said inertia means comprises an annular mass secured to each of said elastic members,

wherein said energy dissipative means comprises a squeeze film damper.

4,583,913

LINER OF A SEMI-AXIAL FLOW PUMP

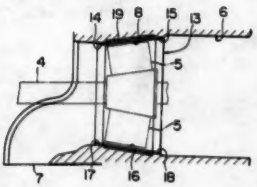
Mitsuhiro Yazaki, Kakogawa, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Sep. 28, 1984, Ser. No. 655,641

Claims priority, application Japan, Oct. 3, 1983, 58-153874[U]

Int. Cl.⁴ F04D *29/52*; B63H *11/08*

U.S. Cl. 415—196 **1 Claim**



1. A semi-axial flow pump for water jet type propulsion device for a boat comprising:

an axial flow passage for ejecting water having a truncated-conical portion forming a recess having an inner peripheral wall diverging toward the stern of the boat, said passage having cylindrical portions adjacent opposite ends of said truncated-conical portion constituting a smaller diameter cylindrical passage portion and a larger diameter cylindrical passage portion, respectively, formed to protrude in the radially inward direction from said truncated-conical portion;

an impeller located inside said truncated-conical portion and mechanically connected to a prime mover for rotating; and

a liner for protecting said inner peripheral wall including a hollow tube having a truncated-conical portion and cylindrical portions at both ends of said truncated-conical portion, said liner being force fitted into said axial flow passage with said cylindrical ends adjacent said truncated-conical portion in pressure contact with said cylindrical portions of said liner and providing clearance between said inner peripheral wall and said truncated-conical portion of said liner for preventing said liner from being pushed sternwards due to elastic repulsive force produced by the water forced by the rotation of said impeller.

4,583,914

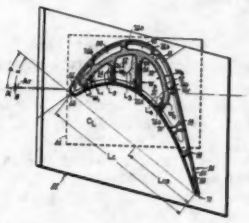
ROTOR BLADE FOR A ROTARY MACHINE

Harold M. Craig, and Ernest Feder, both of West Hartford, Conn., assignors to United Technologies Corp., Hartford, Conn.

Filed Jun. 14, 1982, Ser. No. 388,328

Int. Cl.⁴ F01D *5/08, 5/30*

U.S. Cl. 416—204 A **14 Claims**



1. In a rotor blade of the type adapted for use in axial flow rotary machines having a rotor disk adapted by slots to receive a plurality of rotor blades, one rotor balde at each slot, each rotor blade adapted by a root to engage the root disk and having an airfoil extending outwardly across a flow path for working medium gases, the improvement which comprises:

a spanwisely extending spar having an airfoil section and a root, the root having a leading edge surface and a trailing edge surface and the airfoil section of the spar being spaced chordwise from the leading edge surface and the trailing edge surface of the root,

a shell for defining the airfoil surface of the blade which is spaced from the airfoil section of the spar, the shell having a base region adjacent the root of the spar which extends chordwisely beyond the root region of the spar; and

a plurality of ribs extending between the shell and the spar for transmitting operative loads acting on the shell to the airfoil section of the spar during operation of the rotor assembly;

wherein operating loads acting on the base region of the shell chordwisely beyond the root region of the spar are transmitted through the shell and the ribs to the airfoil section of the spar and from the airfoil section of the spar to the root.

4,583,915

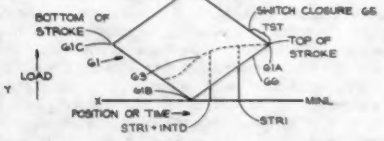
PUMP-OFF CONTROLLER

Richard C. Montgomery, and G. Wayne Westerman, both of Midland, Tex., assignors to End Devices, Inc., Midland, Tex.

Filed Aug. 1, 1983, Ser. No. 519,266

Int. Cl.⁴ F04B *49/06, 47/02*

U.S. Cl. 417—26 **17 Claims**



1. A process of controlling the motor of a well pumping unit

of the type having a walking beam which is cyclically operated by a motor for raising and lowering a polish rod of a borehole pump, comprising the steps of:

during each cycle of the walking beam, obtaining a continuous measurement representative of the load on said polish rod,

using the minimum load measured as a base, integrating the load measured during each cycle within a predetermined time period occurring as the polish rod moves from the top of its stroke to the bottom of its stroke to produce a control function,

comparing said control function with a predetermined limit value, and

if the value of said control function exceeds said predetermined limit value, shutting off the motor of said well pumping unit.

4,583,916

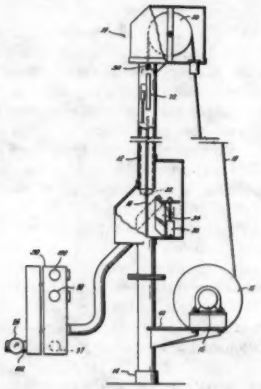
ELECTRICAL CONTROL SYSTEM FOR OIL WELL BAILER PUMP

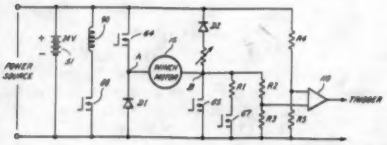
Karl A. Senghaas, and Peter Senghaas, both of San Antonio, Tex., assignors to Southwest Bailer Pump Company, San Antonio, Tex.

Continuation-in-part of Ser. No. 566,831, Dec. 29, 1983, Pat. No. 4,516,911. This application Mar. 18, 1985, Ser. No. 713,216

Int. Cl.[4] F04B *49/00, 17/00;* E21B *27/00*

U.S. Cl. 417—36 **9 Claims**





1. In an electric control system for an oil well bailer pump having an electric motor for actuating a cable for lowering a bailer into an oil well, filling the bailer, raising the bailer, emptying the bailer, and recycling, the improvement in means sensing the fluid level of the oil in the oil well comprising,

a sensing circuit connected to the motor for monitoring the voltage generated by the motor as the motor is driven as a generator as the bailer is lowered into well, and

means for determining when the bailer contacts the oil in the well by sensing the drop in the generated voltage from the motor.

5. An electrical control system for an oil well bailer pump having a battery driven direct current electric motor for actuating a cable for lowering a bailer into an oil well, filling the bailer, raising the bailer, emptying the bailer, and recycling comprising,

a winch up circuit for actuating the motor to raise the bailer,

an up overshoot circuit for opening the bailer for emptying oil therefrom, said overshoot circuit actuated by the end of the winch up circuit,

an up hold circuit for directing the draining oil from the bailer and actuated by the end of the overshoot circuit,

a free fall winch down circuit for lowering the bailer towards the surface of the oil in the well, said winch down circuit actuated in response to the up hold circuit,

electrical charging circuit connected between the motor and the battery for charging the battery from the motor as the bailer is lowered and rotates the motor,

a down overshoot circuit for lowering the bailer a predetermined distance below the oil surface in the well for filling said bailer with oil, said down overshoot circuit actuated in response to the electrical charging circuit, and

a down hold circuit for allowing time for the bailer to fill, said down hold circuit actuating the winch up circuit.

4,583,917

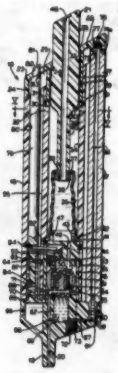
PRESSURE REGULATING AND MONITORING DEVICE

Nayan S. Shah, 6821 Sutherland Ct., Mentor, Ohio 44060

Continuation-in-part of Ser. No. 505,462, Jun. 17, 1983, abandoned. This application Apr. 1, 1985, Ser. No. 718,196

Int. Cl.[4] F04B *21/00*

U.S. Cl. 417—63 **35 Claims**



1. A hand held regulating and monitoring device, comprising:

an elongate hollow barrel having a crown end sloping from a front side of the barrel toward a rear side of the barrel;

a pressure monitoring gauge tube carried by said front side of said barrel and having gauging indicia thereon;

a digitally operable air pressure generating plunger pump having a plunger head normally projecting above said crown end and the remainder of the plunger extending into said barrel and having pump mechanism within said barrel;

a pressure chamber within said barrel and a check valve passage connecting said pump mechanism with said chamber;

a mercury reservoir communicating with said chamber and with said gauge tube;

air previous but mercury impervious means separating said reservoir from said chamber;

a passage bypassing said reservoir and leading from said chamber and including means for connecting said bypass

passage with a point of use of air pressure so that in the operation of said pump mechanism air pressure will be conducted to the point of use and to said reservoir;

a check valved pressure release passage provided in said barrel in communication with said chamber; and

means for opening said pressure release passage including a plunger reciprocable in a bore located in said barrel rearwardly from said plunger pump and having a digitally operable terminal projecting from said crown end a substantially shorter distance than the distance which said plunger heads projects from said crown end, so that said plunger head and said plunger terminal can be selectively operated by the same digit of a hand in which the device is held.

4,583,918

ARRANGEMENT FOR ELEVATING LIQUID BY USE OF SOLAR AND/OR WIND ENERGY

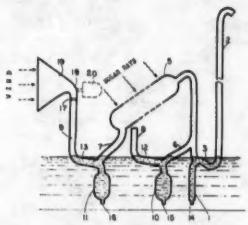
Iosif Baumberg, Brooklyn, N.Y., assignor to Danmine Siftware and Technology, Inc., Fair Lawn, N.J.

Filed Feb. 12, 1985, Ser. No. 700,961

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] F04F *1/18*

U.S. Cl. 417—108 **3 Claims**



1. An arrangement for elevating liquid by the use of solar and/or wind energy, comprising

a first pipe to be immersed in a liquid and extending upwardly in the liquid upon immersion therein:

a second pipe to be directed upwardly from a surface of the liquid;

a third pipe connecting an upper end of said first pipe and a lower end of said second pipe so that an interconnection of said third pipe with said first pipe is located higher than an interconnection of said third pipe with said second pipe to provide entrapment of liquid in said third pipe upon immersion of said first pipe into the liquid up to said first-mentioned interconnection, said first pipe having a liquid inlet at its lower end and an air port at its upper end;

pressure means for applying a pressure differential between said air port and said discharge port and responsive to the presence of liquid in said third pipe such that pressure from said pressure differential means builds up when said third pipe is closed off with liquid and decreases upon voiding of said third pipe and said second pipe;

an air supply pipe connected with said air port of said first pipe and said pressure means and connected with said first pipe and said third pipe so as to form a tee, thereby to form a separate liquid portion in said first pipe in response to said pressure differential and to provide an air passage to said pressure means via said air port upon discharge of said liquid portion at said discharge port, said pressure differential and said air passage being formed alternately and repetitively during the presence of solar and/or wind energy; and

purging means for air purging of said pressure means and including an hydraulic valve connected with said air supply pipe and having upper and lower open pipes connected with one another, wherein said upper pipe has an outlet arranged to be above the surface of the liquid.

4,583,919

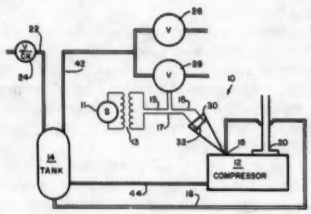
LUBRICATION SYSTEM FOR A COMPRESSOR

Jeffrey S. Keith, Charlotte, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 18, 1984, Ser. No. 621,750

Int. Cl.[4] F04B *39/04*

U.S. Cl. 417—228 **6 Claims**



1. In combination with a gas compressor, a lubrication system therefor, comprising:

first means for conducting gas to said compressor; and

second means for conducting gas and lubricant from said compressor; wherein

said second means includes reservoir means for storing lubricant; further including

third means communicating with said reservoir means and said compressor for passing lubricant therethrough from said reservoir means to said compressor;

means, coupled to said second means, operative for controllingly modulating the fluid conduct of said second means;

means, coupled to said third means, for directly communicating with lubricant therewithin, and for sensing a given condition of lubricant therein; and

means, coupled to said sensing means and said modulating means, responsive to a given setpoint of said given condition, as sensed by said sensing means, for operating said modulating means.

4,583,920

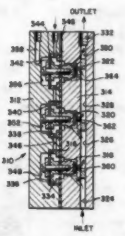
POSITIVE DISPLACEMENT DIAPHRAGM PUMPS EMPLOYING DISPLACER VALVES

Georg H. Lindner, Vlissingen, Netherlands, assignor to M&T Chemicals Inc., Woodbridge, N.J.

Filed Dec. 28, 1983, Ser. No. 566,363

Int. Cl.[4] F04B *3/00, 43/06*

U.S. Cl. 417—266 **7 Claims**



1. A diaphragm pump for discharging minute quantities of liquid, said pump adapted to be submerged in a receptacle containing the liquid to be discharged, said pump comprising:

(a) a pump body composed of a plurality of segments,

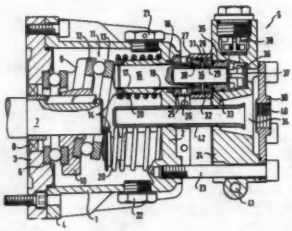
(b) an inlet port defined at the lower end of the body and an outlet port defined thereabove,
(c) at least three spaced pumping chambers defined within said pump body between said inlet and outlet ports and in communication therewith,
(d) conduits interconnecting said pumping chambers in series between said inlet and outlet ports,
(e) at least one pumping diaphragm secured within said body between said segments to seal off one side of each pumping chamber,
(f) at least three driving diaphragms secured with said pump body, each in association with a respective one of said pumping chambers,
(g) at least three pressure chambers defined within said pump body, each in association with a respective one of said pumping chambers,
a pulse generator connected between a supply of pressurized air and said pump body to deliver control pulses of air to said pressure chambers in a particular sequence and for a desired duration of time, and
(i) at least three displacer valves secured to said pumping diaphragm and said driving diaphragms to draw fuid into said pump body through said inlet port, advance the fluid sequentially from pumping chamber to pumping chamber, and then discharge the fluid through said outlet port in discrete pulses, while preventing backflow through said pumping chambers, in response to said control pulses of air.

4,583,921

PLUNGER PUMP

Horst Wolff, and Franz Hani, both of Geretsried, Fed. Rep. of Germany, assignors to Speck-Kolbenpumpen-Fabrik Otto Speck KG, Fed. Rep. of Germany

Filed Dec. 28, 1984, Ser. No. 687,615
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347307
Int. Cl.⁴ F04B *1/18, 39/02;* F01B *31/10*
U.S. Cl. 417—269 **19 Claims**



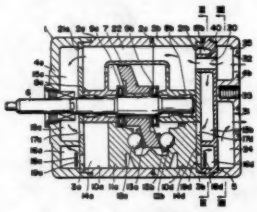
1. A plunger pump comprising:
a housing;
an eccentric drive unit, including a drive shaft, mounted to the housing;
a plurality of pump chambers formed within the housing;
a plurality of plungers and plunger sleeves, associated with the pump chambers, mounted to the housing, the plungers' axes arranged parallel to the drive shaft, the plungers arranged in a circular grouping concentric with the drive shaft axis;
each plunger including a metallic plunger section disposed towards the eccentric drive and a ceramic section associated with the respective pump chamber, both sections being adhered with one another, the cross-section of the metallic section being larger than the cross-section of the ceramic section;
inlet valves fluidly connected to the pump chambers;
a suction chamber disposed centrally of the pump chambers and in fluid communication therewith through respective inlet valves;
generally radially disposed outlet valves, opening into a common annular pressure chamber, in fluid communication with the pump chambers;
first, second and third seals positioned in line along the plungers towards the eccentric drive and pump chambers respectively;
anti-contamination regions, fluidly connected to a region external of the pump through a bore, between the first and second seals surrounding the plungers to prevent contamination by fluid migration along the plunger; and
leakage return regions, fluidly connected to the suction chamber, between the second and third seals surrounding the plungers to permit a pumped fluid which leaks past the third seal to return to the suction chamber.

4,583,922

SWASH PLATE TYPE COMPRESSOR IMPROVED WITH ELONGATED AND TORTUOUS INPUT AND OUTPUT PASSAGE SYSTEMS

Takeo Iijima; Mototaka Shitara; Seiji Sumikawa, and Susumu Saito, all of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1984, Ser. No. 684,089
Claims priority, application Japan, Dec. 29, 1983, 58-199588[U]
Int. Cl.⁴ F04B *1/18, 39/12, 11/00*
U.S. Cl. 417—269 **5 Claims**



1. In a swash plate type compressor having:
(a) a rotatable drive shaft;
(b) a cylinder block assembly in which said drive shaft is rotatably mounted, said cylinder block assembly having a plurality of pairs of cylinder bores, the two cylinder bores of each said pair being coaxial and axially opposed to one another, said pairs fo cylinder bores extending parallel to said drive shaft and being disposed around said drive shaft;
(c) a plurality of double headed pistons, one for each of said pairs of said cylinder bores, each of said pistons having one of its heads slidably received in one of the corresponding pair of said cylinder bores and the other of its heads slidably received in the other cylinder bore of said pair;
(d) a swash plate fixedly mounted on said drive shaft in an oblique orientation and slidably engaged with each of said pistons, so that said pistons are reciprocated as said drive shaft and said swash plate are rotated in said cylinder block assembly;
(e) a first valve plate on a first end of said cylinder block assembly which closes the end of one cylinder bore of each of said pairs thereof to define a first set of cylinder chambers;
(f) a second valve plate on a second end of said cylinder block assembly which closes the end of the other cylinder bore of each of said pairs thereof to define a second set of cylinder chambers;
(g) a first end block secured to said first end of said cylinder block assembly and holding said first valve plate thereagainst, and having a shape which in cooperating with

said first valve plate defines a first input plenum and an output plenum;

(h) first input valve means which communicates said first input plenum with each one of said first set of cylinder chambers when and only when said one of said first set of cylinder chambers is expanding;

(i) first output valve means which communicates said output plenum with each one of said first set of cylinder chambers when and only when said one of said first set of cylinder chambers is contracting; and

(j) a second end block at said second end of said cylinder block assembly, and having therein an inlet and an outlet;

the improvement comprising:

(k) a partition plate secured to said second end of said cylinder block assembly between said second end and said second end block and holding said second valve plate against said second end of said cylinder block assembly, and having a shape which in cooperation with said second valve plate defines a second input plenum and at least one output chamber;

(l) second input valve means which communicates said second input plenum with each one of said second set of cylinder chambers when and only when said one of said second set of cylinder chambers is expanding;

(m) second output valve means which communicates said output chamber with a corresponding one of said second set of cylinder chambers when and only when said corresponding one of said second set of cylinder chambers is contracting;

(n) said second end block being having a shape which in cooperation with said partition plate defines an inlet buffering chamber into which said inlet opens and an outlet buffering chamber into which said outlet opens;

(o) said cylinder block assembly having an input transfer passage extending between its two ends and communicated at its one end with said first input plenum and at its other end with said second input plenum;

(p) said partition plate having at least one output transfer aperture which communicates said output chamber to said outlet buffering chamber; and

(q) a means for communicating said inlet buffering chamber to said input transfer passage constituted by a boss integral with said partition plate and having a through hole therethrough, said boss projecting into said input transfer passage and one end of said through hole opening into said inlet buffering chamber and the other end of said through hole opening into said input transfer passage.

4,583,923

BELLOWS LATCHING MECHANISM FOR A SUBMERSIBLE PUMP

Mark C. James, Claremore, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed Feb. 10, 1984, Ser. No. 579,044

The portion of the term of this patent subsequent to Jan. 8, 2002, has been disclaimed.

Int. Cl.⁴ F04B *17/00*

U.S. Cl. 417—414 **5 Claims**

1. A submersible pump assembly comprising in combination:

a pump;

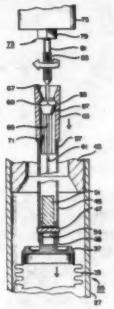
an electric motor located below the pump for rotating the pump, the motor being filled with lubricant;

a housing carried at the lower end of the motor;

a bellows mounted to the housing below the motor and separating lubricant from well fluid, the bellows having a movable end and an axially expansible sidewall that allows the end to move between a minimum position providing minimum volume for lubricant and a maximum position providing maximum volume for lubricant to reduce pressure differential between the lubricant and well fluid;

a rigid linkage member secured to the end of the bellows and extending upwardly from the bellows into the housing;

means for securing the linkage member in the housing to prevent movement of the end of the bellows toward the maximum volume position while the pump assembly is being lowered into the well, and for releasing the linkage



member once the motor begins to operate to allow the end of the bellows to freely move.

4,583,924

GEAR PUMP, ESPECIALLY FOR MEDICAL PURPOSES

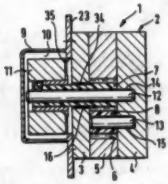
Wolfgang Zenglein, Schweinfurt, and Franz-Josef Weinbeer, Traustadt, both of Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Nov. 7, 1984, Ser. No. 669,632

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1983, 3340748

Int. Cl.⁴ F04B *17/00*

U.S. Cl. 417—420 **10 Claims**



1. Gear pump, in particular for medical purposes, comprising a pump housing having a base plate, a cover plate and a housing center portion which is disposed therebetween and therewith defines a pump chamber having an inlet and an outlet, at least two pump wheels being disposed in said chamber, one of which drives and at least a further of which is driven, the driven pump wheel having a bearing opening and consisting of plastic and rotating with its bearing opening to form a plastic-metal antifrictional pairing directly on a stationary journal of metal which is mounted in the pump housing, characterized in that

(a) the driving pump wheel also consists of plastic and is connected to a drive shaft of plastic,

(b) the drive shaft is constructed as a hollow shaft couplable to a drive member and in a passage recess passes unguided through the base plate and that the driving pump wheel is disposed on a stationary journal of metal mounted in the pump housing,

(c) the driving pump wheel like the driven pump wheel forms with the surface of the journal a plastic-metal antifrictional pairing,

(d) the drive member is disposed outside the base plate of the pump housing and is constructed as the magnet of a magnetic coupling, and

(e) the journal for mounting the driving pump wheel extends into the axial region of the drive member and supports the

hollow shaft from the inside to form a plastic-metal antifrictional pairing.

4,583,925

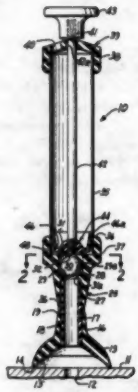
SUCTION PUMP

Alfred J. Hawkins, Riverside, Calif., assignor to Irrometer Company, Inc., Riverside, Calif.

Filed Oct. 3, 1984, Ser. No. 657,375

Int. Cl.[4] F04B *21/02*

U.S. Cl. 417—555 R 11 Claims



1. A suction pump comprising:

a valving member having a body with a passage therethrough said passage having a peripheral axially extending wall, and comprising:

a valve seat in said passage;

a valve ball in said passage adapted to move against and away from said seat, said ball having lateral dimensions less than those of the passage, a leaflet on said body and in said passage so shaped and disposed and resiliently bearing against said valving ball as to trap it and hold it against said valve seat in the absence of a sufficient fluid force in said passage immediately downstream from said valve seat to displace the valve ball from the valve seat, said body and leaflet being made of elastomeric material, integral with one another, and inherently flexible and resilently resisting said displacement so that the leaflet must be deformed for the ball to leave the seat;

a cylinder having an internal cylindrical wall, said cylinder being attached to said valving member and communicating with said passage;

a cup seal in said cylinder having a flexible flange in sliding contact with said cylindrical wall and being sufficiently flexible as to deflect to permit passage of air in one direction of seal movement, and sufficiently shape retaining to make a sliding fluid-tight seal when moved in the opposite direction;

a plunger rod connected to said cup seal; and

a structure fitted to the other end of said cylinder guiding and passing said rod.

4,583,926

VANE STRUCTURE FOR VANE TYPE AIR PUMPS

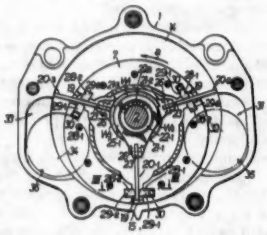
Masahito Mitsumori, Tokyo; Kenji Hamabe, and Hiroshi Kaneda, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

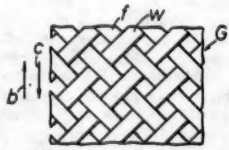
Filed Oct. 4, 1984, Ser. No. 657,744

Claims priority, application Japan, Oct. 7, 1983, 58-155718[U]; Oct. 7, 1983, 58-155719[U]

Int. Cl.[4] F04C *18/00, 27/00, 29/00;* B32B *5/12*

U.S. Cl. 418—137 8 Claims





1. A vane for a vane type pump including elongated sealing elements having a length for engaging the sides of the vane, comprising, multiple layers of cloth laminated and bound together by a synthetic material, and at least the outermost layer of cloth on both sides of the vane having its threads positioned at an acute angle of substantially 45° to the length of the elongated sealing elements.

4,583,927

SCREW ROTOR MECHANISM

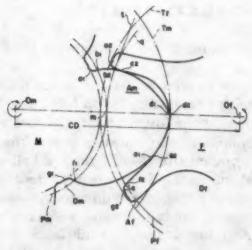
Kazuo Shigekawa, Hyogo, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 15, 1984, Ser. No. 589,684

Claims priority, application Japan, Mar. 16, 1983, 58-44682; Mar. 16, 1983, 58-38622[U]

Int. Cl.[4] F01C *1/16, 1/24*

U.S. Cl. 418—150 2 Claims



1. A screw rotor mechanism for using compressors or other devices, comprising:

a male and female screw rotor wherein said female rotor (F)

is formed with an addendum (AF) on an outer side of a pitch circle of each tooth thereof and said male rotor (M) is formed with a dedendum (Dm) on an inner side of a pitch circle at each root thereof complementary to said addendum (Af) of the female rotor;

said male rotor (M) including in a follower side tooth profile thereof an arc (d1-e1) having a center thereof at an intersection (m) of a pitch circle (Pm) of said male rotor and a line connecting centers (Of, Om) of said female and male rotors;

said female rotor (F) including in a leading side tooth profile thereof a curve through first and second points (d2, c2), said curve being generated by a third point (d1) on said male rotor having an outer diameter (Tm) of a dimension of approximately $1.37 \times \overline{CD}$; and

said female rotor having said addendum (Af) formed at a rate of approximately 1.7% to 2.3% wherein said first and third points (d1, d2) are located on a straight line connecting said centers of said male and female rotors and $\overline{CD}$ is a distance between said rotor centers.

4,583,928

APPARATUS FOR REBUILDING PORTIONS OF MOLDED ELEMENTS, PARTICULARLY VEHICLE TIRES

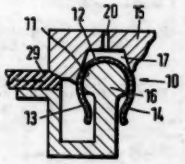
Lothar Fink, Achim-Baden, and Werner Fabarius, Lilienthal, both of Fed. Rep. of Germany, assignors to Desma-Werke GmbH, Achim beil Bremen, Fed. Rep. of Germany

Continuation of Ser. No. 342,961, Jan. 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 306,806, Sep. 29, 1981, abandoned, which is a continuation of Ser. No. 143,688, Apr. 25, 1980, abandoned. This application Jun. 6, 1984, Ser. No. 617,157

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917632

Int. Cl.[4] B29D *30/54*

U.S. Cl. 425—13 **2 Claims**



1. A device fo retreading portions of casings utilizing vulcanized rubber, especially for the sectional retreading of automotive tires, comprising:

(a) an injection molding and vulcanization mold having at least two integral mold parts (15, 16) which are separable from one another, one of said mold parts being positioned on one side of a casing at a section of said casing to be retreaded, and another of said mold parts being positioned on the other side of said casing at said section of said casing to be retreaded, a first one (15) of said mold parts forming a mold cavity (17) with said section of said casing to be retreaded on an outer surface of said casing, said first one of said mold parts having lateral sealing means for said mold cavity comprising sealing edges sealed to said casing, a second one (16) of said mold parts being fitted to the shape of the interior of said casing and serving as a support for the entirety of said section of said casing to be retreaded;

(b) a support member (29) insertable between said first and second ones of said mold parts in a closed position of said mold parts, said support member being wedge-shaped and disposed so as to carry a closing pressure between said first and second mold elements such that only a small sealing pressure is transmitted by said mold elements to said casing, said wedge-shaped support member being located between said first and second ones of said mold parts at a position radially spaced from said mold cavity; and

(c) means arranged at right angles to a circumferential direction of said casing for sealing said mold cavity in a manner such that said mold cavity can be positioned in an area directly adjacent a previously produced segment of a running tread molded by said mold, whereby plural segments may be formed successively in a circumferential direction of said casing.

4,583,929

APPARATUS FOR MANUFACTURING AN OPTICAL CABLE ELEMENT

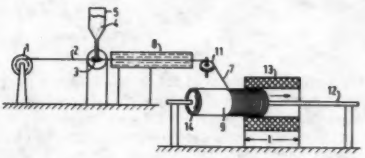
Johann A. Becker, Overath, and Werner Zell, Cologne, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1984, Ser. No. 582,428

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1983, 3306603; Mar. 17, 1983, 3309573

Int. Cl.[4] G02B *6/44*

U.S. Cl. 425—71 **5 Claims**



1. A device for manufacturing an optical cable element, said device comprising:

an extruder for extruding a synthetic resin envelope around an optical fiber, said extruder extruding the envelope at an elevated temperature and at an extrusion velocity;

a cooling bath for cooling the extruded synthetic resin envelope;

a furnace having a heating zone for heating the fiber and cooled envelope to a tempering temperature; and

means for passing the fiber and envelope through the heating zone at a tempering velocity which is substantially less than the extrusion velocity;

characterized in that the means for passing the fiber and envelope through the heating zone comprises:

a drum having an axis;

means for winding the fiber and envelope on the drum around the drum axis; and

means for moving the drum through the heating zone in the direction of the drum axis.

4,583,930

APPARATUS FOR PRODUCING STRIP OF DOUGH HAVING CONSTANT DIMENSIONS AND FLOW RATE

Toraliko Hayashi, 3-4, Nozawa-machi, Utsunomiya-shi, Tochigi-ken, Japan

Filed Apr. 8, 1985, Ser. No. 720,760

Claims priority, application Japan, Apr. 9, 1984, 59-69103; Jun. 8, 1984, 59-116708

Int. Cl.[4] B29C *41/52*

U.S. Cl. 425—148 **7 Claims**

1. An apparatus for continuously producing at a constant flow rate a strip of dough of constant dimensions comprising:

a feed conveyor assembly for continuously feeding the dough,

a dough weighing device located between the opposite ends of the conveying portion of said feed conveyor assembly to continuously measure the weight of each portion of the dough conveyed past the weighing device,

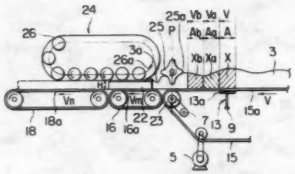
a pressing means disposed at a predetermined fixed position

above and adjacent to the rear end of said feed conveyor assembly, adapted to rotate about its own axis at substantially the same linear speed as the conveyor speed of at least the rear end portion of said feed conveyor assembly,

a first constant-speed conveyor arranged in series with and adjacent to said feed conveyor assembly,

a second constant-speed conveyor arranged in series with and adjacent to said first constant-speed conveyor, said second constant-speed conveyor being driven at a speed higher than that of said first constant-speed conveyor,

a roller mechanism positioned above the first and second constant-speed conveyors, and comprising a plurality of rollers rotatable about their axes and movable in unison in the same direction, along the endless roller path, as the



direction of movement of the dough strip, the peripheries of the moving rollers forming a closed envelope having a lower straight portion spaced, by a predetermined height, apart from and above the conveying portion of both said constant-speed conveyors,

two defining members positioned, one on each side of the passage of the dough strip, between said straight portion of said endless roller path and said conveying portion of said first constant-speed conveyor to define the width of the dough,

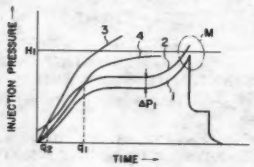
a control unit for controlling the speed of at least the rear end portion of said feed conveyor assembly at a speed inversely proportional to the weight of a dough portion measured so as to make constant the dimensions and flow rate of the strip of dough.

4,583,931

INJECTION PRESSURE MONITORING APPARATUS

Shigeru Fujita, Numazu; Hideo Banzai, Mishima, and Hideo Tanaka, Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1984, Ser. No. 592,016
Claims priority, application Japan, Mar. 23, 1983, 58-48450
Int. Cl.⁴ B29C *47/92*
U.S. Cl. 425—149 **4 Claims**



1. The apparatus for monitoring data concerning a continuously varying injection pressure in an injection process of an injection molding machine comprising:

a detecting unit for detecting data concerning an injection pressure using multipoint sampling;

a monitoring system operatively connected to said detecting unit for monitoring the detected data, said monitoring system comprising:

a signal transmitting unit;

a memory unit operatively connected to said detecting unit and said signal transmitting unit for storing data concerning an injection pressure of one injection molding operation cycle satisfying conditions predetermined on the basis of a desired mold product, the data being stored as reference data in the form of a data curve which is variable with time;

an operation circuit operatively connected to said memory unit and said signal transmitting unit for calculating an upper allowance data for said reference data, said upper allowance data being stored as a data curve having the same shape as the reference data curve with a constant offset therebetween;

a comparing unit operatively connected to said operation unit and said detecting unit for continuously comparing said upper allowance data with data regarding injection pressure of another injection molding operation cycle detected using a multipoint sampling; and

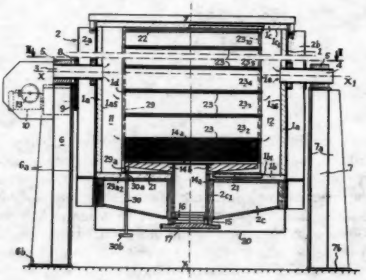
an alarm unit for generating alarm information when the detected data of said another injection molding operation cycle exceeds said upper allowance data to thereby prevent mechanical damage of the injection molding machine.

4,583,932

ROTATIONAL MOULDING MACHINE

Paul V. Meuret, La Seyne-s/Mer, France, assignor to Societe a Responsabilite Limitee Datome, La Seyne-s/Mer, France

Filed Mar. 22, 1985, Ser. No. 715,179
Claims priority, application France, Apr. 6, 1984, 84 05605
Int. Cl.⁴ B29C *41/50, 39/38*
U.S. Cl. 425—182 **24 Claims**



1. A rotational moulding machine comprising a heat-insulated enclosure mounted to rotate on a frame about a substantially horizontal axis, which enclosure comprises means for receiving and driving in rotation at least one mould about an axis perpendicular to the axis of rotation of the enclosure, said enclosure further comprises, inside radiating elements located in front of the walls of the enclosure whose radiations are reflected by reflector means towards the central part of the enclosure where the mould is located in order to heat said mould by radiation.

said at least one mold having locking means for connecting said mold to a support means including a plate, said locking means being actuatable from outside said enclosure by means of a key passed in at least one opening in the bottom of the enclosure.

4,583,933

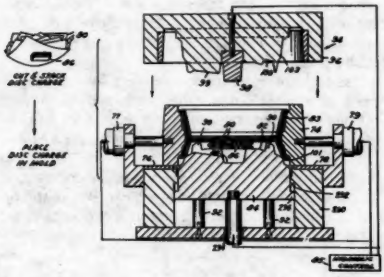
MOLD FOR FORMING A FIBER REINFORCED COMPOSITE WHEEL CONSTRUCTION

James A. Woelfel, and Richard W. Smith, both of Lansing, Mich., assignors to Motor Wheel Corporation, Lansing, Mich.

Division of Ser. No. 559,623, Dec. 12, 1983, Pat. No. 4,514,013, which is a continuation of Ser. No. 277,657, Jun. 26, 1981, abandoned, which is a division of Ser. No. 119,128, Feb. 6, 1980, Pat. No. 4,294,639, which is a continuation-in-part of Ser. No. 14,265, Feb. 11, 1979, abandoned. This application Dec. 24, 1984, Ser. No. 685,448

Int. Cl.[4] B29C *43/00*

U.S. Cl. 425—330 6 Claims



1. In a compression mold for forming a resin vehicle wheel and comprising rim mold sections radially reciprocal with respect to a central mold axis and disc mold sections cooperable with said rim mold sections to form a mold cavity, the improvement wherein said disc mold sections are both reciprocal as respective unitary structures axially and substantially simultaneously with respect to each other between closed portions for forming said cavity and open positions for ejecting a molded wheel, said disc mold sections being spaced apart throughout their extent when in said closed position such as to form an imperforate disc.

4,583,934

EXTRUDER FOR A FLUID MATERIAL

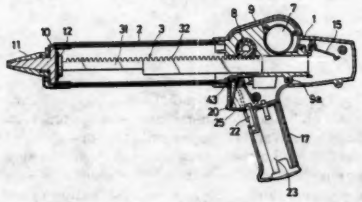
Shunichi Hata; Makoto Miyata, and Ichirou Kishi, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jul. 5, 1984, Ser. No. 627,857

Claims priority, application Japan, Aug. 5, 1983, 58-144250

Int. Cl.[4] B29C *47/00*

U.S. Cl. 425—376 R 5 Claims



1. An extruder for a fluid material comprising:

a casing for holding a cartridge containing a fluid material and having an end thereof arranged to be pushed so as to extrude the fluid material contained in said cartridge;

a plurality of pushing members for pushing said end of the cartridge so as to extrude the fluid material, said pushing members extending in parallel along a direction in which the cartridge end is pushed;

a driving means for driving the pushing members to move successively in the direction of pushing the end of the cartridge so as to extrude the fluid material; and

a displacement restraint means for restraining a subsequent pushing member from displacement toward the pushing direction and restrained by a smaller force than a driving force applied to a preceding pushing member when the preceding pushing member is driven to move in the pushing direction by the driving means;

each of said pushing members having a rack formed on a side thereof facing in the same direction; and

said driving means comprises a pinion positioned to mesh with the rack of the preceding pushing member to move it in the pushing direction when the subsequent pushing member is in its initial position.

4,583,935

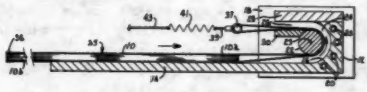
APPARATUS FOR FORMING THERMOPLASTIC LAMINATES INTO MAJOR SECTIONS

Luthur R. Frey, Sedgwick County, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 29, 1984, Ser. No. 665,551

Int. Cl.[4] B29C *61/10, 53/04*

U.S. Cl. 425—384 2 Claims



1. Apparatus for bending a thermoplastic laminate having multiple plies bonded together to form a substantially flat sheet, said apparatus comprising:

a forming tool having a curved surface;

a rotatable spool member having a generally cylindrical configuration, said spool member being spaced from said curved surface of the forming tool and cooperating therewith for receiving the sheet and define a passage therebetween; and

heating means located adjacent said curved surface of the forming tool for heating the sheet in said passage to an elevated temperature at which the plies of the laminate slip along with another, whereby the sheet can be fed into the passage with the ply slippage permitting the sheet to bend in conformity with the curvature of the passage.

4,583,936

FREQUENCY MODULATED BURNER SYSTEM

David A. Krieger, Toledo, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed Jun. 24, 1983, Ser. No. 507,539

Int. Cl.[4] F23C *11/04*

U.S. Cl. 431—1 19 Claims

1. A combustion apparatus comprising:

a combustion chamber;

at least a first burner operatively communicating with the combustion chamber;

a frequency modulated burner control system for cyclically actuating the burner at a selected, fixed burn rate and deactuating the burner, including:

(i) means for indicating a selected set point combustion chamber temperature;

(ii) means for sensing temperature in the combustion chamber;

(iii) error means for determining a deviation between the selected and sensed temperatures, the error means being operatively connected with the set point means and temperature sensing means; and,

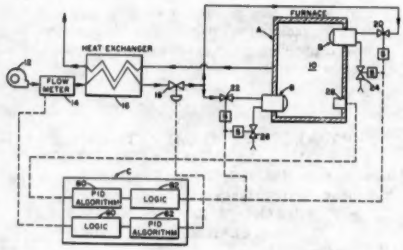
(iv) duty cycle adjusting means for adjusting the burner

actuation/deactuation ratio, the duty cycle means being operatively connected with the error means for adjusting the burner actuation/deactuation ratio in accordance with the deviation such that the frequency modulated burner control system controls thermal input from the burner.

10. A method of combusting fuel comprising:

supplying fuel and air to a burner;

cyclically actuating the burner to combust the fuel at a preselected burn rate and deactuating the burner;



varying a duty cycle at which the burner is actuated at the fixed burn rate to vary the amount of heat produced, whereby the heat is controlled by varying a burner actuation/deactuation ratio of each cycle;

sensing a temperature within a combustion chamber;

determining a deviation between the sensed temperature and a selected temperature; and,

in the duty cycle varying step, adjusting the duty cycle in accordance with the sensed and selected temperature deviation.

4,583,937

COMBUSTION APPARATUS WITH CONTROL MEANS INCLUDING AN OXYGEN SENSING PROBE AND PROBE THEREFOR

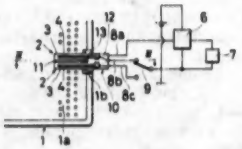
Toshifumi Yamana, Kasugai, Japan, assignor to Rinnai Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 15, 1980, Ser. No. 216,521

Claims priority, application Japan, Dec. 18, 1979, 54-163571

Int. Cl.[4] F23N *5/00*; G01N *27/04, 27/58*

U.S. Cl. 431—76 **11 Claims**



1. An oxygen sensing probe, including: a substrate of a thermally activated, electrical conducting material which, when within a determined range of temperatures, exhibits an electrical conductance in direct relationship with the concentration of oxygen present in a surrounding atmosphere;

elongate portions of said substrate extending in closely spaced relationship and which are interconnected at one of their ends by an integral bridging portion of the substrate, each said elongate portion having opposed substantially parallel faces; and

an electrode of platinum extending longitudinally of each of said opposed substantially parallel faces of each elongate portion and in contact therewith, and which terminates at one of its ends on said bridging portion.

7. In a combustion apparatus of the type including dual electrically conductive oxygen sensing elements and an electronic circuit selectively connected to said sensing elements and which controls the ratio of air to fuel supplied to said apparatus, the improvement comprising;

a unitary sensing probe constituted by a substrate of a thermally-activated, electrically conducting material which, when within a determined range of temperatures, exhibits an electrical conductance in direct relationship with the concentration of oxygen present in a surrounding atmosphere;

elongate portions of said substrate extending in closely spaced relationship and which are interconnected at one of their ends by an integral bridging portion of the substrate, each said elongate portion having opposed substantially parallel faces;

an electrode of platinum extending longitudinally of each said face and in contact therewith, and which terminates at one of its ends on said bridging portion; and,

an electrical connection between each said electrode and said electronic circuit;

said sensing probe being positioned in the combustion apparatus with said elongate portions exposed to the products of combustion and said bridging portion shielded from said products of combustion.

4,583,938

GAS BURNER OF THE PRE-MIXTURE TYPE WITH FLAME CONTROL AND UTILIZATION OF THAT BURNER ESPECIALLY IN AN IMMERSED PIPE INSTALLATION

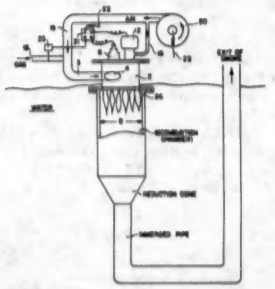
Benoît H. Fardeau, Pierrefitte; Claude Chapuis, Epinay sur Seine, and Georges Austruy, Villetaneuse, all of France, assignors to Gaz de France, Paris, France

Filed Jun. 5, 1984, Ser. No. 617,457

Claims priority, application France, Jun. 8, 1983, 83 09468

Int. Cl.[4] F23N *5/08*

U.S. Cl. 431—79 **4 Claims**



1. A gas burner of the air and combustible gas mixture type having a combustion chamber and a distribution chamber including forward and rear open ends, the forward open end of the distribution chamber being coupled to an opening of the combustion chamber, the burner comprising:

a supply duct connected into the distribution chamber for introducing the air and combustible gas mixture thereto in a tangential flow;

a fuel control valve for regulating the combustible gas from a fuel source to said supply duct;

a flame stabilizing grid interposed between the combustion chamber opening and the forward open end of the distribution chamber for allowing the air combustible gas mixture to flow from the distribution chamber into the com-

bustion chamber and for containig flame produced from the combustion of the air and combustible gas mixture in the combustion chamber;

ignition means extending into the combustion chamber for igniting the air and combustible gas mixture, thereby producing the flame;

a nozzle having an inlet and an outlet coupled, via its outlet, to the rear open end of the distribution chamber; the nozzle further being oriented, along its longitudinal axis, perpendicularly to the flame-stabilizing grid;

a control cell mounted on the inlet of the nozzle for sensing operating conditions of the flame, the operating condition resulting from ultraviolet radiation emitted from the flame, through the flame-stabilizing grid, said control cell causing the closing of said fuel control valve upon the sensed ultraviolet radiation of the flame falling below a desired value; and

a secondary duct connected to the side of the nozzle and perpendicular to the longitudinal axis thereof for injecting pressurized air therein, the pressure of the pressurized air from the secondary duct being greater than the pressure of the air and combustible gas mixture from the supply duct so that the pressure of the air in the nozzle is greater than the pressure of the air and combustible gas mixture in the distribution chamber, the higher pressured air in the nozzle protecting the control cell from backfire and maintaining the control cell in a lower temperature environment.

4,583,939

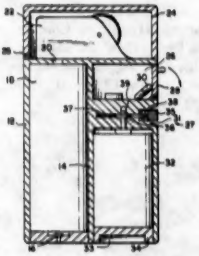
COMBINATION CIGARETTE LIGHTER AND PERFUME DISPENSER

Richard Brickwedde, 134-25 96th St., Ozone Park, N.Y. 11417

Filed Oct. 29, 1984, Ser. No. 666,178

Int. Cl.[4] F23Q *1/02*

U.S. Cl. 431—253 **1 Claim**



1. A combination cigarette lighter and perfume dispenser which comprises:

(a) a casing having two hollow chambers and including a discharge orifice in said casing to discharge perfume therefrom;

(b) a cigarette lighting mechanism for igniting and sustaining an open flame carried by said first hollow chamber of said casing;

(c) a reservoir in said second hollow chamber of said casing adapted to hold a supply of perfume;

(d) a pump mechanism which comprising an elongated pipe extending from within said reservoir to said discharge orifice, a valve located on said pipe between said reservoir and said discharge orifice, and a spring loaded push button to manually activate said valve for dispensing said perfume; and

(d) a compartment having a hollow cavity and a door, said cavity is adapted to hold a supply of pills or the like and is located adjacent said reservoir while said door can be opened to gain access to said cavity.

4,583,940

IGNITER FOR COMBUSTIBLE MATERIAL

Conrad Zellweger, 7, chemin des Voirons, 1224 Chene-Bougeries, and Victor C. Spreter, 25, chemin de Ruite, 1252 Meinier, both of Switzerland

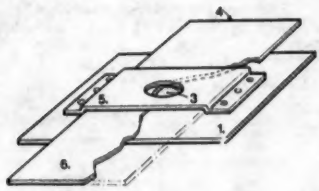
PCT No. PCT/EP83/00276, § 371 Date Nov. 23, 1984, § 102(e) Date Nov. 23, 1984, PCT Pub. No. WO84/01811, PCT Pub. Date May 10, 1984

PCT Filed Oct. 24, 1983, Ser. No. 626,857

Claims priority, application Switzerland, Oct. 28, 1982, 6286/82

Int. Cl.[4] A24F *27/14*

U.S. Cl. 431—269 **8 Claims**



1. Igniter for combustible material, comprising a substantially planar support, an element made of a composition capable of being ignited by friction and supported on said planar support, and a friction-strip having at one end a surface portion treated in order to produce the ignition of the element by friction, the element being located in a space between the support and the friction-strip, a guide element affixed to said support and forming a channel in which said friction-strip is slidingly arranged, said guide element having an aperture formed therein, and means formed on said support for arranging the element to be ignited in said channel in opposing relationship to said aperture, such that upon ignition of the element flame therefrom passes through said aperture when said friction-strip is moved over a sufficient length to ignite and uncover the element, the means for arranging said element to be ignited adjacent the aperture comprises an indentation in said support which holds said element to be ignited.

4,583,941

BURNER FOR GASEOUS FUEL

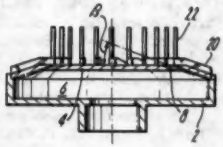
Freda Elperin, Beer Sheva, and Abraham Tamir, Omer, both of Israel, assignors to Ben-Gurion University of the Negev Research and Development Authority, Beer Sheva, Israel

Filed Aug. 12, 1983, Ser. No. 522,532

Claims priority, application Israel, Aug. 13, 1982, 66538

Int. Cl.[4] F23D *14/12*

U.S. Cl. 431—347 **5 Claims**



1. A gas-fuelled burner producing a concentrated, rotating flame, comprising a body including a plenum chamber connected to a source of fuel gas and primary combustion air, which chamber is defined and delimited on its upper side by a roof element having a plurality of relatively narrow passageways for said gas/air mixture, said passageways leading from said plenum chamber upwards and inwards to the upper, outside face of said burner, wherein said passageways include

angles with a common plane perpendicular to the vertical axis of said burner, and wherein individual vertical planes substantially passing through said passageways are tangential to an imaginary vertical cylinder passing through the center of said burner, the portion of said roof element located inwardly of said passageways being imperforate.

4,583,942

APPARATUS FOR THE REMOVAL OF LACQUER FROM METALLIC AND CERAMIC ARTICLES

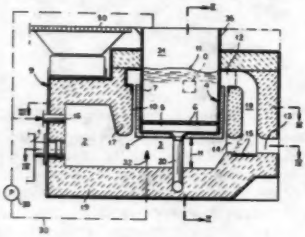
Ewald Schwing, Wiesfurthstr. 99, 4133 Neukirchen-Vluyn; Peter Sommer, Johann-Strauss-Str. 13, and Horst Uhrner, Schumannstr. 9, both of 4174 Issum, all of Fed. Rep. of Germany

Filed Sep. 28, 1984, Ser. No. 655,869

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335537

Int. Cl.[4] F27B *15/00*

U.S. Cl. 432—58 **6 Claims**



1. An apparatus for delacquering metallic and ceramic objects, comprising:

at least one housing formed with a burner chamber provided with at least one burner, and an afterburner chamber connected with said burner chamber;

a fluidized-bed retort in said housing having a bottom formed with a nozzle chamber communicating with the interior of said retort through nozzles for delivering a fluidizing gas to a fluidized bed in said retort into which said objects can be introduced for delacquering, the delacquering producing a retort gas containing combustibles;

means for feeding at least a portion of said retort gas from said retort to said afterburner chamber for combustion thereof to produce heat surges, said retort being heated from below by heat from said burner chamber and said afterburner chamber; and

a body of refractory heat-storage ceramic material attached onto said retort in contact with gases from said afterburner chamber for leveling thermal surges to which said retort is subjected.

4,583,943

PROCESS FOR CALCINING PULVERULENT MATERIAL

Paul Cosar, Paris, and Jean-Pierre Henin, La Madelaine, both of France, assignors to Fives-Cail Babcock, Paris, France

Division of Ser. No. 425,294, Sep. 28, 1982, Pat. No. 4,477,251. This application Jul. 24, 1984, Ser. No. 633,786

The portion of the term of this patent subsequent to Aug. 14, 2001, has been disclaimed.

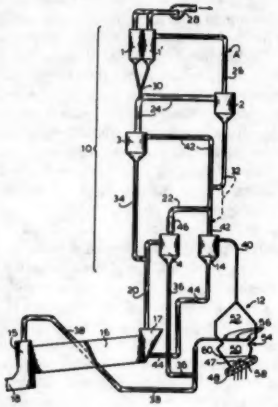
Int. Cl.[4] F26B *3/08*; **F27B** *15/00*

U.S. Cl. 432—14 **2 Claims**

1. A process for the calcination of a solid pulverulent raw material for the preparation of cement clinker, which comprises the steps of

(a) gasifying a solid fuel in a fluidized bed to produce a vertically ascending current of gaseous fuel above the bed,

(b) injecting the material and an oxidizing gas into the ascending current of gaseous fuel to mix the gaseous fuel with the oxidizing gas and to disperse the pulverulent material in the gaseous fuel current, the flow velocity of the gases in the ascending current in the zone of injection of the material being sufficient to entrain the material in the gases and to prevent them from falling back into the fluidized bed, and



(c) separating the calcined cement clinker raw material from fumes produced by combustion of the fuel and oxidizing gas, introducing the separated raw material into a kiln for producing the cement clinker, and using the fumes for preheating the raw material before it is injected into the ascending current of gaseous fuel.

4,583,944

ORTHODONTIC DEVICES

Gustaf H. Hanson, Hamilton, Canada, assignor to Augusta Developments Inc., Hamilton, Canada

Filed Jan. 10, 1985, Ser. No. 690,211

Int. Cl.[4] A61C *7/00*

U.S. Cl. 433—22 **10 Claims**

1. In combination, an orthodontic device for attachment to an orthodontic arch wire at a selected location thereon, and a pliers for manipulating the orthodontic device to attach it to the arch wire, the pliers comprising opposed closable legs for engagement with the orthodontic device, and registered slots in the respective leg for receipt of the arch wire, the orthodontic device comprising:

a core member having a longitudinal axial bore for reception of the arch wire and permitting the core member to be slidably engaged on the arch wire;

the core member having one end of smaller diameter and the other end of larger diameter with a longitudinally-extending frustro-conical exterior face between the said ends, and a longitudinal slit extending along its length from the exterior face to the axial bore to permit deformation of the

core member radially to grip the arch wire disposed within the axial bore; and

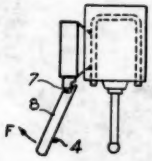
a hollow external sleeve having a tapered interior face with one end of larger internal diameter and the other end of smaller internal diameter complementing said frustroconical exterior face of the core member and so that with the sleeve mounted about the core member with the core member end of larger diameter protruding from the end of the sleeve of larger internal diameter, and with the opposed plier legs engaged respectively with the larger diameter end of the core member and the smaller internal diameter end of the sleeve, closing of the closable plier legs together produces relative axial movement of the sleeve and the core member to insert the core member into the sleeve and deform the core member radially inwards to clamp the device onto the arch wire at the selected location.

4,583,945

TISSUE PROTECTION DEVICE FOR MOUNTING ON THE HEAD OF A DENTIST'S DRILL

Bernard Labarde, 87330 Mezieres-sur-Issoire, France

Filed Feb. 22, 1985, Ser. No. 704,187
Claims priority, application France, Feb. 22, 1984, 84 02679
Int. Cl.[4] A61C *1/16*
U.S. Cl. 433—116 **6 Claims**



1. A device for protecting an inner portion of a patient's mouth from a dentist's drill where said drill includes a drill head, said device comprising;

a protective plate having a fixed portion and a tilting portion pivotally mounted with respect to the fixed portion such that the protective plate may be pivoted away from or toward the drill;

mounting means for mounting the fixed portion with respect to the drill head; and

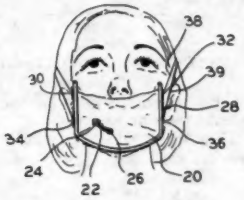
spring means for biasing said tilting portion to a first predetermined position, said tilting portion being movable toward a second predetermined position against the bias of said spring means upon insertion of said tilting portion between a tooth of a patient and said inner portion of patient's mouth to be protected, said tilting portion being biased toward said tooth, which substantially corresponds to said first predetermined position whereby said drill head may be positioned at different orientations with respect to said tooth while the tilting portion remains substantially fully in position between the tooth and inner portion of the mouth to be protected due to the spring biased, pivotal mounting of the tilting portion with respect to the fixed portion of the protective plate.

4,583,946

HOLDER FOR RUBBER DENTAL DAM

Kathleen A. Shanel, St. Charles, Ill. 60174

Continuation-in-part of Ser. No. 790,567, Apr. 25, 1977, Pat. No. 4,215,477, and a continuation-in-part of Ser. No. 85,252, Oct. 16, 1979, Pat. No. 4,512,742. This application Jul. 14, 1980, Ser. No. 167,837
The portion of the term of this patent subsequent to Apr. 23, 2002, has been disclaimed.
Int. Cl.[4] A61C *5/12*
U.S. Cl. 433—136 **9 Claims**



1. A human facial frame for holding a dental dam, said frame having a generally U-shaped frame means comprising two upright members and an arcuate bottom member adapted to extend around and in front of a mandible, the arc of said bottom member having a radium which is less than 3 inches for surrounding a substantial arcuate portion of a patient's face and extending from molar to molar, said two upright members of the U-shaped frame means being adapted to be positioned on opposite sides of the face and head and in a position generally parallel to a facial plane which is defined by the nasion and the pogonion, said two upright members being adapted to be located in the range of approximately one-quarter of the distance extending from the ear to the facial plane, with the origin of the two upright frame members so located being adapted to rest over approximately the gonion on opposite sides of the patient's head when the bottom of the U-shaped means is positioned in and pivoted around the pogonion in the front of the chin, the frame including a plurality of outwardly projecting fastener means for securing a dental dam around the periphery of the U-shaped frame means, and other fasteners on the frame adapted to anchor dental tape tied in place about a patient's head.

4,583,947

CUSTOM DENTURES AND METHOD OF MAKING SAME

Mitchell M. Hazar, Scottsdale, Ariz., assignor to Hazco Development Inc., Tempe, Ariz.

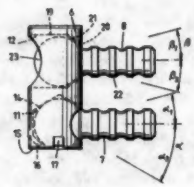
Continuation-in-part of Ser. No. 476,233, Mar. 17, 1983, Pat. No. 4,470,815. This application Oct. 14, 1983, Ser. No. 542,039
The portion of the term of this patent subsequent to Sep. 11, 2001, has been disclaimed.
Int. Cl.[4] A61C *13/22*
U.S. Cl. 433—171 **64 Claims**

1. In a method of making a denture customized to suit a particular oral cavity, the steps comprising:

(a) manufacturing a denture base in one of a plurality of

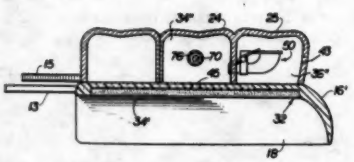
standard sizes and having at least one socket therein for receiving an array of prosthetic teeth;
(b) positioning said array in said at least one socket;
(c) manufacturing a representation of said particular oral cavity;
(d) selecting a denture base having prosthetic teeth positioned therein in one of said plurality of standard sizes which is most closely accommodated by said representation;
(e) conforming the selected denture base to the surface contours of said representation; and
(f) securing said prosthetic teeth within said sockets.

4,583,948
APPARATUS FOR CONNECTING DENTAL PROSTHESES
Jozef Jansen, Rotterdam, Netherlands, assignor to Elgarden Aktiengesellschaft, Vaduz, Liechtenstein
Filed Aug. 6, 1984, Ser. No. 637,731
Claims priority, application Switzerland, Apr. 27, 1984, 2090/84
Int. Cl.[4] A61C *13/22*
U.S. Cl. 433—181 **8 Claims**



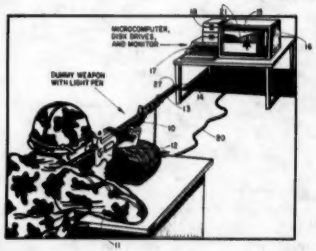
1. Apparatus for connecting dental prostheses, comprising two pins intended to engage existing teeth or supports, at least one anchoring element including two or more recesses for respectively receiving said two pins, and means for mounting at least one of said pins pivotingly in the associated one of said recesses, at least one of said recesses being a continuous throughbore disposed substantially perpendicular to a longitudinal axis of the anchoring element for enabling a hole to be drilled in the tooth through the anchoring element.

4,583,949
PARTIAL VACUUM STABILIZER FOR DENTAL PROSTHESIS
Olaf A. Heartness, 2493 New York Ave., Melville, N.Y. 11747
Filed Jun. 11, 1984, Ser. No. 619,046
Int. Cl.[4] A61C *13/24*
U.S. Cl. 433—185 **20 Claims**



1. A dental prosthesis structure primarily designed to be secured within the mouth of the user through the application of a partial vacuum, said structure comprising:
(a) dental plate means structured for mounting along a predetermined length of an alveolar ridge of the user and including at least one dental plate having an undersurface configured and dimensioned for sealing engagement with an exposed surface portion of the alveolar ridge,
(b) channel means comprising a differential pressure channel formed in said plate undersurface and disposed to extend along at least a portion of the length of said dental plate and in fluid communicating relation with the exposed surface portion of the alveolar ridge,
(c) teeth means secured to said dental plate and protruding from an outer surface thereof, said teeth means including a hollow interior portion comprising a first chamber disposed in direct fluid communication with said differential pressure channel and a second chamber structured for direct communication with atmosphere and the exterior of said hollow interior portion,
(d) valve means mounted on said teeth means and disposed in fluid regulating relation between said differential pressure channel and the exterior of said teeth means,
(e) said valve means comprising a one-way flow valve structured to permit fluid flow from said channel means to said teeth means to the exterior thereof and prohibit fluid flow therethrough to said differential pressure channel from the exterior of said teeth means,
(f) said valve means further comprising a venting valve mounted within said hollow interior portion and in communicating relation with the exterior of said teeth means, said venting valve disposed and structured to regulate fluid flow from the exterior of said teeth means to said differential pressure channel,
whereby creation of a negative pressure within the mouth establishes a negative pressure within said differential pressure channel and sealed engagement between said plate undersurface and the alveolar ridge.

4,583,950
LIGHT PEN MARKSMANSHIP TRAINER
James E. Schroeder, 1331 Peacock Ave., Columbus, Ga. 31906
Filed Aug. 31, 1984, Ser. No. 646,322
Int. Cl.[4] A63F *9/22*
U.S. Cl. 434—22 **2 Claims**



1. A marksmanship training apparatus comprising, a television monitor having a screen for presenting target images thereon, a photosensitve device spaced from four to twenty feet from said screen and responsive to light emitted therefrom, a converging lens system for interposition between said photosensitive device and said screen for focussing the real image of said screen on said photosensitive device as a function of the distance from the lens to the screen and the focal length of the lens, a microcomputer coupled to said light pen and said television monitor for producing said target images on said screen and for indicating the relationship between said light pen and said target images, a videodisc player coupled to said microcomputer and said television monitor for producing said target images on said screen, a firearm attached to said photosensitve device and said converging lens system in which said photosensitve device transmits information to said microcomputer about point of aim of said firearm, and a trigger switch on said firearm electrically coupled to said photosensitive device to signal said microcomputer in response to trigger manipulation.

4,583,951

ROLL-TYPE LEARNING AID APPARATUS FOR READING AND MEMORIZING

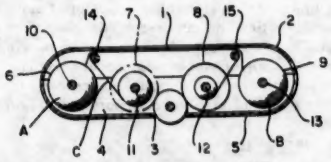
Choi Y. Soo, Seoul, Rep. of Korea, assignor to Foundation Korea Campus Crusade for Christ, Seoul, Rep. of Korea

Filed Jun. 11, 1985, Ser. No. 743,597

Claims priority, application Rep. of Korea, Feb. 18, 1985, 85-1633[U]

Int. Cl.[4] G09B *17/00*; G09F *11/18*

U.S. Cl. 434—178 1 Claim



1. A roll-type learning aid apparatus for reading and memorizing English words or Chinese characters etc., comprising a rectangular case consisting of a lid part with a display window and a bottom part with a transverse long-hole formed thereon, a pair of roll-shafts which are rotatably supported over two supporting walls disposed oppositely within said case, a word-listed paper ribbon being wound around both said roll-shafts, a forward knob and a backward knob which are interlocked with the roll-shafts by pinions respectively and partly projected outward the bottom part of case, and two guide rods which serve to maintain the word-listed paper ribbon in parallel with the display window under tension when it travels from one roll-shaft to other roll-shaft.

4,583,952

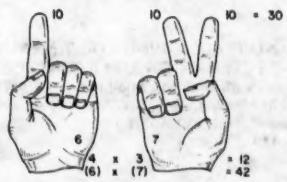
METHOD FOR TEACHING MULTIPLICATION AND DIVISION WITH NUMBERS 6 THROUGH 9

Evelyn De La Paz Rios, P.O. Box 2512, Globe, Ariz. 85502

Filed Feb. 21, 1985, Ser. No. 703,713

Int. Cl.[4] G09B *19/02*

U.S. Cl. 434—191 3 Claims



1. A visual, kinesthetic, tactile and sometimes audible method for teaching students to mathematically manipulate the numbers 6 through 9 comprising the steps of:

(a) conforming the fingers of a first one of either hand to form a symbol representative of a selected number from 6 through 9 using the following rules for construction of said symbols:

beginning with all the fingers of either hand folded to form a first,

(1) construct the symbol for 6 by raising one finger,

(2) construct the symbol for 7 by raising two fingers,

(3) construct the symbol for 8 by raising three fingers,

(4) construct the symbol for 9 by raising four fingers;

(b) conforming the fingers of a second one of either hand to represent a symbol for a second one of a selected number from 6 through 9 using the same rules for symbol construction set forth in step (a) above;

(c) assigning a value of TEN to each of the upraised fingers in each hand, forming each said symbol representative of the number selected for representation on either one of said first and second hands;

(d) assigning a value of ONE for each finger remaining folded in each hand, forming each said symbol representative of the number selected for representation on either one of said first and second hands;

(e) determining the product for the two selected numbers now represented by the hand conforming symbols produced by steps (a) and (b) by

(1) counting by TENS (ten, twenty, thirty . . .) on each of the upraised fingers of BOTH hands;

(2) noting the accumulated TENS value determined in step (e) (1);

(3) determining the sum of ONES value on the symbol formed by the first one of said either hand by counting by ONE (one, two, three . . .) on each of the folded fingers of said first hand;

(4) determining the sum of ONES value on the symbol formed by the second one of said either hand in the same manner in step (e) (3);

(5) multiplying the ONES value determined in step (e) (3) by the ONES value determined in step (e) (4); and

(6) adding the result of step (e) (5) to the accumulated TENS value noted in step (e) (2) to obtain the product of the two selected numbers represented by the hand conforming symbols produced by steps (a) and (b).

4,583,953

OUTBOARD MOTOR

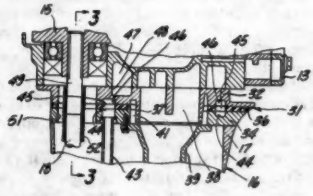
Ryoichi Nakase, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Continuation of Ser. No. 471,314, Mar. 2, 1983, abandoned. This application Jun. 6, 1985, Ser. No. 742,130

Claims priority, application Japan, Mar. 11, 1982, 57-37293

Int. Cl.[4] B63H *1/15*

U.S. Cl. 440—52 13 Claims



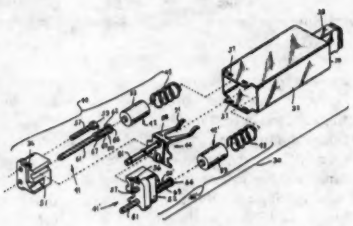
1. In an outboard motor or the like comprising a power head including an internal combustion engine and a surrounding protective cowling, a drive shaft housing depending from said power head and containing a drive shaft driven by said engine, and a lower unit depending from said drive shaft housing and supporting a propeller adapted to be driven by said drive shaft, the improvement comprising vibration damping means interposed between said power head including both said engine and said protective cowling and said drive shaft housing for minimizing the transmission of vibrations therebetween comprising a vibration damping pad interposed between the interface of said power head and said drive shaft housing and fixed relative to each of said power head and said drive shaft housing and thus forming the sole connection therebetween, said vibration damping pad being formed with openings therein for passage of water between the cooling jacket of said engine and said drive shaft housing and for the passage of exhaust gases from said engine to said drive shaft housing.

4,583,954

METHODS OF ASSEMBLING ELECTRICAL PROTECTIVE DEVICES

John L. Chapman, Jr., Catonsville; Thomas A. La Valle, Annapolis, and Peter S. Nelson, Severna Park, all of Md., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Division of Ser. No. 383,385, May 28, 1982, Pat. No. 4,458,288.
This application Mar. 30, 1984, Ser. No. 595,141
Int. Cl.[4] H01H *39/00*
U.S. Cl. 445—7 6 Claims



2. A method of assembling an electrical protector, said method including the steps of:

holding a housing having an open end with the open end oriented upwardly;

allowing a pair of compression springs to descend into the housing into engagement with a closed end thereof;

inserting a voltage protection subassembly which includes spark-gap means mounted in an electrically conductive container into engagement with each of the springs with center and base electrodes of each said voltage protection subassembly being spaced apart and positioned along a common axis, each said common axis being spaced from a centerline axis of the protector assembly;

assembling a pair of current protection subassemblies, each of which includes a base portion, first and second conductive pins extending through the base portion with each first pin being connected electrically to a second pin, and a sleeve which is disposed concentrically about and releasably secured to each first pin, with a grounding subassembly, which includes a ground plate, a ground pin and two projecting portions, to cause the plate to be disposed adjacent to the assembled base and to cause the ground pin to extend through the base;

moving the assembled grounding subassembly and current protection subassemblies into the housing to cause an end of each sleeve and one of the projecting portions of the grounding subassembly to engage portions of one of the voltage protection subassemblies, wherein the assembly is made to cause an axis through each sleeve and associated first pin to be offset from said common axis of the associated voltage protection subassembly and wherein each said current protection subassembly, associated voltage protection subassembly and compression spring are associated with a tip or ring conductor of a circuit to be protected; and

aligning tabs extending from the base with the housing and causing the tabs to snap-lock into slots in the housing to secure the base to the housing.

4,583,955

CUPCAKE HOLDER

Christine D. Toloczko, 42 Mann St., Worcester, Mass. 01602

Filed Jul. 2, 1984, Ser. No. 626,748
Int. Cl.[4] A63H *33/00*; A47J *37/00*
U.S. Cl. 446—73 8 Claims

1. Cupcake holder, comprising:

(a) a planar main body portion having a circular opening and adapted to lie in a horizontal plane for receiving and supporting a cupcake cup,

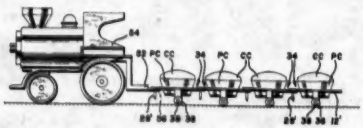
(b) support means on said portion including at least two supporting legs extending downwardly from the main body portion for maintaining the main body portion in a stable and vertically spaced relation to a flat supporting surface so that a cupcake cup which is supported in said main body portion is also spaced from said supporting surface,

(c) a first coupling element attached at one end of the main body portion, and

(d) a second coupling element attached at the opposite end of the main body portion which is adapted to couple with the first coupling element of an identical cupcake holder for connecting the cupcake holders together so that a plurality of said cupcake holders can be connected in series to form a chain of said cupcake holders.

7. Combination toy and cupcake holder, comprising:

(a) a toy figure adapted to be supported on a horizontal flat



supporting surface and having a first coupling element attached at one end thereof, and

(b) a cupcake holder comprising:

(1) a planar main body portion having a circular opening and adapted to lie in a horizontal plane for receiving and supporting a cupcake cup,

(2) support means on said portion including at least two supporting legs extending downwardly from the main body portion for maintaining the main body portion in a stable and vertically spaced relation to said flat supporting surface so that a cupcake cup which is supported in said main body portion is also spaced from said supporting surface, and

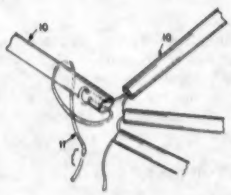
(3) a second coupling element attached at one end of the main body portion which is adapted to couple with said first coupling element for connecting the cupcake holder to the toy figure.

4,583,956

RIGID AND TELESCOPING STRUT MEMBERS CONNECTED BY FLEXIBLE TENDONS

William A. Nelson, 52 High St., Middleburg, Vt. 05753

Filed Nov. 2, 1984, Ser. No. 667,748
Int. Cl.[4] A63H *33/10*
U.S. Cl. 446—119 4 Claims



1. A construction toy capable of producing various geometrical structures, comprising a first plurality of elongate strut members, each such strut member being composed of a generally rigid hollow tubular material, said tubular material having a sidewall which forms end openings having an inside diameter and an outside diameter and each such strut member being pierced transversely near each of its ends with two or more distinct openings separate from said end openings, each such

opening being adapted to receive a flexible connecting member; and a plurality of flexible connecting members capable of being threaded recursively into a first strut member by passing an end of the flexible connecting member into the hollow end opening of the first strut member, out a first transverse opening, into a second transverse opening, and out the same hollow end opening through which it entered, and thence through the ends of a second and additional strut members in the same manner, and finally knotted so as to secure the joint and align the angular relationships of the struts so joined.

4,583,957

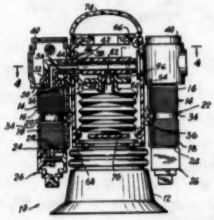
PNEUMATICALLY-OPERATED ROBOTIC TOY

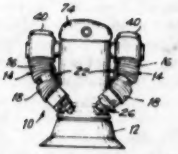
Henry A. Levy, 402 Foster Ave., Brooklyn, N.Y. 11230

Filed Mar. 8, 1984, Ser. No. 587,696

Int. Cl.[4] A63H *3/06*

U.S. Cl. 446—177 **16 Claims**





1. A PNEUMATICALLY-OPERATED ROBOTIC TOY comprising a housing; arms extending from said housing and including bellows means; air pump means located within said housing; conduit means providing fluid communication between said air pump means and said bellows means of said arms; and means for activating said air pump including handle means installed on an outer portion of said housing, air pump compression means positioned within said housing, and a gripping portion means interacting with said air compression means when said handle means and said gripping portion are forced together, wherein activation of said air pump means causes elongation of said bellows means and movement of said arms from a first to a second position.

4,583,958

TOY GUN/ROBOTIC-HUMANOID ASSEMBLY WITH BULLET PROPELLING APPARATUS

Takashi Matsuda, Tokyo, Japan, assignor to Takara Co., Ltd, Tokyo, Japan

Filed Feb. 28, 1984, Ser. No. 584,459

Claims priority, application Japan, Mar. 18, 1983, 58-39148[U]; Mar. 18, 1983, 58-39149[U]

Int. Cl.[4] A63H *13/10, 3/46, 33/30*

U.S. Cl. 446—308 **20 Claims**

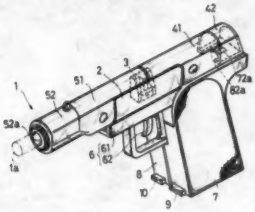
1. A combination toy gun and robotic-humanoid assembly that can be reconfigured from one configuration to another configuration at the option of the user comprising:

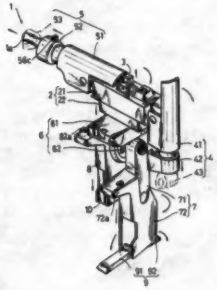
a handle member;

a gun barrel member movably mounted above the handle member;

a trigger assembly positioned adjacent the handle member and beneath the gun barrel member, the handle member, gun barrel member and trigger assembly being permanently and movably connected together and simulating the configuration of a gun in a first position; and

a robotic head member connected to the gun barrel member,





the handle member being configured to simulate the robotic legs of a humanoid robot when moved to a second position, and at least a portion of the gun barrel member being configured to simulate a robotic arm of a humanoid robot when moved to a second position with the robotic head positioned adjacent the robot arm and above the robotic legs wherein a toy robotic humanoid assembly can be provided in the second position by reconfiguration of the toy gun configuration.

4,583,959

DAMPER DISC

Kazuhiko Yoneda, Katano, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Japan

Filed Sep. 1, 1983, Ser. No. 528,477

Claims priority, application Japan, Sep. 16, 1982, 57-140892[U]

Int. Cl.[4] F16D *3/14*

U.S. Cl. 464—68 **2 Claims**

1. A torsion-damping device for an automotive clutch plate assembly, which comprises:

(a) a splined hub with an integral annular flange extending radially outwardly therefrom,

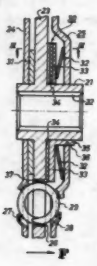
(b) a first and a second annular side plate mounted on said hub for free rotation thereon, with outer peripheral portions interconnected by a stop pin means,

(c) torsion springs mounted in windows of said side plates and said annular flange, said side plates and annular flange being interconnected by said springs,

(d) an annular friction member disposed on said hub between said first side plate and said annular flange,

(e) a wave spring having a wavy surface around its circum-

ference, a friction plate, and a conical spring disposed on said hub in sequence between said annular flange and said second side plate, and a radially extending surface of said friction plate adjacent said wave spring having waves corresponding to waves of said wave spring, and



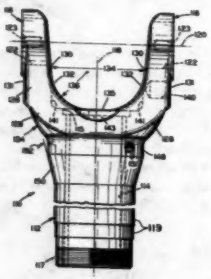
(f) said friction plate being rotatably fixed to said second side plate and said wave spring being rotatably fixed to said annular flange, whereby increases in the twisting torque between the waves of the spring and the waves of the friction plate will increase the pressure therebetween and thereby the hystersis torque.

4,583,960

HEAVY DUTY YOKE

Robert G. Joyner, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Division of Ser. No. 382,036, May 26, 1982, Pat. No. 4,472,158. This application Apr. 19, 1984, Ser. No. 602,044
Int. Cl.⁴ F16D *3/26*
U.S. Cl. 464—134 **13 Claims**



1. A cast metal slip yoke comprising:

a barrel rotatable about an axis and having an axially extending spline for engagement with a mating spline of an associated apparatus;

two axially extending lugs symmetrically positioned about said barrel axis, each of said lugs defining a bearing cross hole extending therethrough transversely to said axis, said bearing cross holes being aligned;

a lug tie-in body joining each of said lugs to said barrel, said body comprising two neck portions, each of said neck portions joined to one of said lugs, respectively, and two shoulder portions, each of said shoulder portions joining one of said neck portions, respectively, to said barrel;

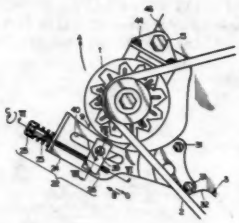
wherein said body further comprises an annular transition surface between said shoulder portions and said barrel, said transition surface having a greater diameter than said barrel, wherein said body further comprises an annular ramp joining said transition surface and said barrel, wherein said ramp is disposed at an angle to the barrel axis of less than 45°.

4,583,961

BELT TENSIONER

Toshio Kawasawa, Aichi; Katsujiro Sato, Toyota, and Akiyoshi Sugiura, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jun. 15, 1984, Ser. No. 620,823
Claims priority, application Japan, Jun. 23, 1983, 58-97261[U]
Int. Cl.⁴ F16H *7/14*
U.S. Cl. 474—113 **7 Claims**



1. A belt tensioner for adjusting a force of a belt tension of a belt for transmitting a torque of a driving member which is mounted on a main body to a driven member which is rotatably mounted on the main body, comprising:

an adjust means having a head portion, a first shaft portion connected to the head portion at one end thereof and including a thread thereon, and a second shaft portion connected the first shaft portion at one end thereof and including a thread thereon which is threaded in the same direction as that of the first shaft portion;

a bracket secured to said main body and having a hole with which said first shaft portion has a thread relation;

a slider means secured onto said driven member and having a hole with which said second shaft portion has a thread relation; and

a biasing means provided between said head portion of said adjust means and said bracket and biasing said head portion of said adjust means in such a direction as said head portion of said adjust means is separate away from said bracket, whereby when said adjust means rotates in order to obtain an optimum belt tension on said belt, said slider moves in the direction to approach to said hole of said bracket and the optimum belt tension is obtained at the time when said head portion of said adjust means contacts on said bracket.

4,583,962

TIMING BELT TENSIONER WITH DAMPED CONSTANT SPRING TENSIONING AND BELT TOOTH DISEGAGEMENT PREVENTION

Klaus K. Bytzek, Schomberg, and Jacek S. Komorowski, Weston, both of Canada, assignors to Litens Automotive Inc., Downsview, Canada

Filed Dec. 7, 1984, Ser. No. 679,476
Int. Cl.⁴ F16H *7/12*
U.S. Cl. 474—133 **13 Claims**

1. A timing belt tensioning device comprising

a fixed structure,

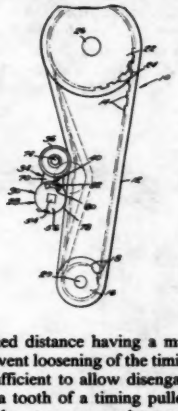
a pivoted structure mounted with respect to said fixed structure for pivotal movement about a first axis between first and second limiting positions,

a timing belt engaging pulley rotatably carried by said pivoted structure for rotational movement about a second axis parallel with said first axis,

spring means mounted between said fixed and pivoted struc-

tures for resiliently biasing the pivoted structure to move in a direction away from said first limiting position toward said second limiting position with a spring force that decreases as the pivoted structure is moved in a direction away from said first position toward said second position,

one-way clutch means for permitting pivotal movement of said pivoted structure in a direction toward said second limiting position and for limiting the pivotal movement of said pivoted structure in an opposite direction toward said first limiting position beyond a predetermined distance measured from the nearest position of said pivoted structure to said second limiting position,



the predetermined distance having a maximum dimension such as to prevent loosening of the timing belt engaged by said pulley sufficient to allow disengagement of a tooth thereof with a tooth of a timing pulley and a minimum dimension such as to accommodate normal operating low amplitude movements and thermal expansion during operation, and

damping means for damping the operating movements of said pivoted structure permitted by said one-way clutch means.

4,583,963

BELT CONSTRUCTION HAVING ENHANCED TOOTH STRENGTH

Richard L. Marsh, and Robert E. Wetzel, both of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 502,777, Jun. 9, 1983, Pat. No. 4,504,342. This application Jan. 14, 1985, Ser. No. 691,240

The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.

Int. Cl.[4] F16G *1/28, 1/04*

U.S. Cl. 474—205 **14 Claims**

1. In a belt construction having opposed sides and comprising a tensile means intermediate said opposed sides, a plurality of teeth defining one of said opposed sides of said belt construction and being mainly formed of a first polymeric material that has reinforcing fibers disposed substantially homogeneously therein, each tooth having opposed sides that are disposed in spaced relation to adjacent sides of adjacent teeth, said belt construction having a land area between adjacent teeth, and a backing member defining the other of said opposed sides of said belt construction, said backing member being mainly formed from a second polymeric material that is initially separate from said material of said teeth, said material of said backing member having a surface that joins with a surface of each tooth whereby said joining surfaces define an interface line therebetween, said interface line for each tooth extending from said tensile means at a point inboard of one of said opposed sides of the respective tooth into the medial portion of said respective tooth and then back to said tensile means at a point inboard of the other of said opposed sides of said respective tooth whereby part of said material of said backing member defines part of the medial portion of each tooth, said surface of said backing member joining with a surface of said first material in each land area whereby said joining surfaces in each land area define an interface line therebetween, the improvement wherein said interface line in each land area has a portion thereof disposed spaced from said tensile means on the side thereof opposite to the side thereof that faces toward said teeth and wherein part of said first and second materials have been exuded through said tensile means.

4,583,964

METHOD AND APPARATUS FOR PRODUCING A CYLINDRICAL PACKING TUBE WHICH IS OPEN AT ONE END AND CLOSED AT THE OTHER

Niels Warncke, Mettmann-Metzkausen, Fed. Rep. of Germany, assignor to J&J G.m.b.H., Dusseldorf, Fed. Rep. of Germany

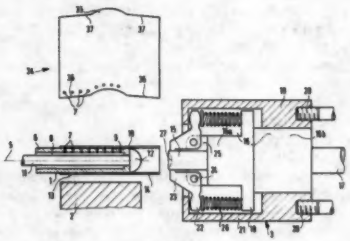
PCT No. PCT/DE83/00080, § 371 Date Jan. 5, 1984, § 102(e) Date Jan. 5, 1984, PCT Pub. No. WO83/03964, PCT Pub. Date Nov. 24, 1983

PCT Filed May 4, 1983, Ser. No. 571,875

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218331

Int. Cl.[4] B21D *5/08*

U.S. Cl. 493—308 **7 Claims**



1. A method for producing a cylindrical packing tube, open at one end and closed at the other and intended, in particular, for enclosing tampons used in female hygiene, wherein said tube is provided with a gripping tab to facilitate the tearing open of the final packed tube, said method comprising;

providing a generally rectangular sheet material for rolling into a cylindrical tube, said sheet having ends and having first and second edges; said first edge having a non-linear contour shaped to have a projecting tab and said second edge having a non-linear contour shaped to have an indentation, said contours of said edges being parallel;

providing a hollow cylindrical winding spindle having suction apertures arranged along its cylindrical wall in a pattern having a non-linear contour identical to the contour of the second edge of said sheet;

introducing said second edge of said sheet tangentially to the cylindrical wall of said winding spindle with said second edge generally parallel to the axis of said winding spindle;

applying suction to said apertures to draw the portion of the sheet adjacent to the second edge onto the spindle;

winding the spindle to form the cylinder with the portion of the sheet adjacent to the first parallel edge overlapping a portion of the sheet adjacent to the second parallel edge; and

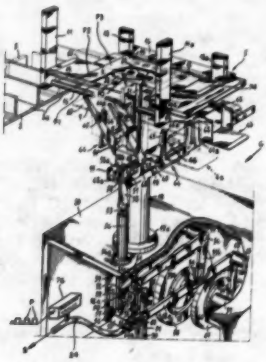
heat sealing said overlapped portions.

4,583,965

ASSEMBLY FOR UNFOLDING FLATTENED CARTONS IN PACKAGING MACHINERY

Ivo Argazzi, Pianoro Nuova, Italy, assignor to Industria Macchine Automatiche - S.p.A., Zola Predosa, Italy

Continuation of Ser. No. 387,014, Jun. 10, 1982, abandoned.
This application Jan. 17, 1985, Ser. No. 692,857
Claims priority, application Italy, Jun. 11, 1981, 3457 A/81
Int. Cl.[4] B31B *1/80*
U.S. Cl. 493—313 **7 Claims**



1. An apparatus for unfolding and erecting flattened cartons in a packaging machine, said apparatus comprising:

a pair of guides for stacking said flattened cartons therebetween, said cartons having at least one pair of panels joined by a fold;

an extractor disposed below one of said panels and provided with vertically reciprocable suction means aligned and engageable with only one of said panels for removing same downwardly from said guide;

a fixed ramp disposed below the other of said panels to one side of said fold and to one side of said guides and inclined downwardly toward said suction means for engaging and lifting said other panel inwardly toward the other side of said guides along said fold into a partially erect position as said other panel is drawn along said ramp upon downward movement of said suction means past said ramp;

at least one arm pivotable about an axis parallel to said fold and disposed below said ramp to said one side of said fold and swingable upwardly and inwardly past said ramp to engage said other panel and raise same to a fully erect position while said other panel is descending, said arm having a vertical surface contacting and guiding said other panel over the full height thereof in said fully erect position;

common drive means for the synchronzied displacement of said pivotable arm and said vertically reciprocable suction means;

means for the lateral displacment of said carton in the direction of the inward pivoting of said arm in the fully erect position thereof and in a direction away from said ramp and said vertical surface defining an erecting position to a loading position adjacent thereto, including a comb-like transporter having first and second pockets of fixed outline positioned with the first pocket thereof aligned below said carton in the erecting position thereof and said second pocket is aligned below another carton in the loading position thereof, means for displacing said transporter vertically and laterally whereby said transporter is displaced upwardly to engage the carton in the erecting position and the carton in the loading position respectively in said first and second pockets, whereupon said transporter is displaced laterally to shift said first carton from said erecting position to said loading position and said other carton from said loading position for further processing, whereupon said transporter is displaced downwardly releasing the respective cartons, said transporter then being displaced laterally again to align the first and second pockets thereof respectively with said erecting position and said loading position, said transporter traversing a rectilinear path in a clockwise direction; and

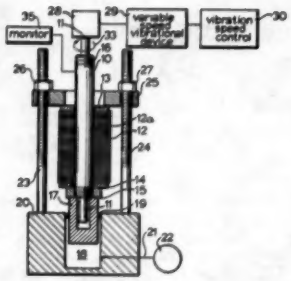
means for the endwise introduction into the cartons in the loading position thereof of goods to be packaged.

4,583,966

METHOD OF FILLING CALENDER/EMBOSSER ROLLS USING VIBRATIONS

Jerold R. Ocker, Roscoe, Ill., and Jere W. Crouse, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Oct. 13, 1982, Ser. No. 434,065
Int. Cl.[4] B21B *13/00*
U.S. Cl. 493—374 **2 Claims**



1. A mechanism for assembling paper machine rolls comprising in combination:

a base support for a lower end of a roll mandrel including a piston with a recess for receiving the mandrel and a cylinder in the base with means for delivering a hydraulic fluid under pressure into the cylinder to apply an axial force to the piston and mandrel supported therein;

vertically extending threaded members projecting upwardly from the base;

a mandrel compressing upper plate mounted on said bolts and removable therefrom for stacking disks on the mandrel and for supporting the upper end of the disks as an axial force is applied at the lower end;

a monitor for attaching to the upper end of the mandrel to detect mandrel vibrational amplitude;

a variable speed vibration generator for connection to the upper end of the mandrel; and

a vibration speed control connected to the generator for varying the vibrational speed of the generator through harmonic frequencies of the shaft with the application of additional disks thereto.

4,583,967

TELESCOPING CATHETER SHUNT SYSTEM

Donald L. Harris, Key Largo, Fla., assignor to Cordis Corporation, Miami, Fla.

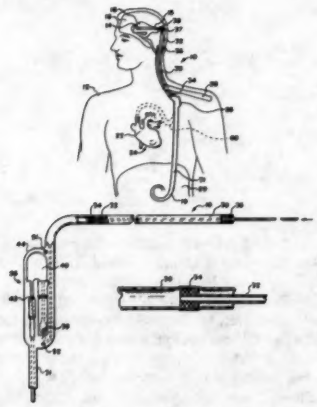
Filed Feb. 13, 1984, Ser. No. 579,347
Int. Cl.[4] A61M *27/00*
U.S. Cl. 604—9 **19 Claims**

1. A telescoping catheter shunt system comprising first and second telescoping tubings, said first tubing being coupled to a catheter adapted to be inserted into a body cavity to be drained and being received within said second tubing which has a larger diameter than said first tubing, a valve assembly which is mounted to said second tubing and which has means for

controlling the drainage of fluid from the cavity in response to pressure of the draining fluid and flexible means that can be pressed from an area external to the body to provide a flushing-/pumping action, said first tubing having a seal forming and stop forming flange at the proximal end thereof which has an outer diameter slightly greater than the inner diameter of said second tubing in which it is received to establish a friction, sealing fit between the outer surface of said flange and the inner surface of said second tubing that defines a primary seal for keeping body fluids other than the draining fluid out of said system, said second tubing having an annular stop member at the distal end thereof through which said first tubing extends such that upon telescoping of the tubings, relative movement between them is limited by engagement of said flange with said annular stop member to prevent disengagement of the tubing so that said tubings cannot separate, the proximal end of said second tubing being attached to the said valve assembly, and a lower drainage catheter being attached to said valve assembly and positioned in a body cavity into which the draining fluid is to be deposited.

4. The system of claim 1 wherein said valve assembly includes a body having a flushing/pumping chamber therein.

12. A method for draining fluid from a body cavity utilizing a telescoping catheter shunt system of the type including first and second telescoping tubings, said first tubing being coupled



to a catheter adapted to be inserted into a body cavity to be drained and being received within said second tubing which has a larger diameter than said first tubing, a valve assembly which is mounted to said second tubing and which has means for controlling the drainage of fluid from the cavity in response to pressure of the draining fluid and flexible means that can be pressed from an area external to the body to provide a flushing-/pumping action, said first tubing having a seal forming and stop forming flange at the proximal end thereof which has an outer diameter slightly greater than the inner diameter of said second tubing in which it is received to establish a friction, sealing fit between the outer surface of said flange and the inner surface of said second tubing that defines a primary seal for keeping body fluids other than the draining fluid out of said system, said second tubing having an annular stop member at the distal end thereof through which said first tubing extends such that upon telescoping of the tubings, relative movement between them is limited by engagement of said flange with said annula.' stop member to prevent disengagement of the tubings so that said tubings cannot separate, the proximal end of said second tubing being attached to the said valve assembly, and a lower drainage catheter being atached to said valve assembly and positioned in a body cavity into which the draining fluid is to be deposited, said method comprising the steps of: positioning the valve assembly through a small incision of the skin in a selected location on the chest; tunneling and installing the drainage catheter under the skin to a second incision over the peritoneal entry site where any excess drain catheter is placed into the peritoneum; making a third incision over the burr hole location on the head; performing a second tunneling operation to pull the pre-assembled telescoping tubings from the valve assembly to the burr hole location, care being taken to assure the telescoping tubings are completely telescoped; making a burr hole in the skull; installing a ventricular catheter into the ventricles of the brain; trimming the ventricular catheter and the telescoping first tubing to a desired length; and securely fastening the ventricular catheter and the first tubing to a right angle connector mounted through the burr hole thereby anchoring one end of the telescoping catheter system to the burr hole and the other end to the valve in the chest at the location of the valve assembly.

4,583,968

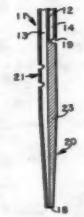
SMOOTH BORE DOUBLE LUMEN CATHETER

Sakharam D. Mahurkar, 6171 N. Sheridan, Suite 1112, Chicago, Ill. 60660

Continuation of Ser. No. 538,671, Oct. 3, 1983. This application Aug. 15, 1984, Ser. No. 641,187

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—43 **25 Claims**



1. A double lumen catheter comprising an elongated unitary cylindrical tube having a longitudinal planar septum of one-piece construction with said tube, said septum dividing the interior of said tube into first and second lumens, the proximal end of said cylindrical tube connecting to two separate tubes communicating with the respective first and second lumens for the injection and removal of fluid, the first lumen extending from the proximal end of said cylindrical tube to an opening at the distal end of said cylindrical tube, and the second lumen extending from the proximal end of said cylindrical tube to at least one opening in the side of the cylindrical surface of said cylindrical tube, said opening to said second lumen being axially spaced from the distal end of said cylindrical tube,

said cylindrical tube having at its distal end a smooth conical tapered tip that smoothly merges with the cylindrical surface of said cylindrical tube around the entire circumference of said tube, said first lumen and the internal wall thereof formed by said septum extending continuously through said conical tapered tip, and having a uniform diameter along its entire length from its proximal end to said conical tapered tip.

4,583,969

APPARATUS AND METHOD FOR IN VIVO EXTRAPULMONARY BLOOD GAS EXCHANGE

J. D. Mortensen, 10600 Dimple Dell Rd., Salt Lake City, Utah 84092

Filed Jun. 26, 1984, Ser. No. 624,627

Int. Cl.⁴ A61M *3/00*

U.S. Cl. 604—49 **16 Claims**

1. A method for effecting in vivo extrapulmonary blood gas exchange comprising the steps of:

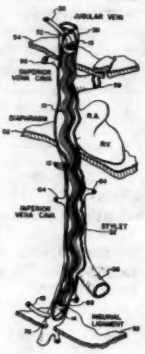
attaching a plurality of gas permeable tubes to a first header

at the inlet end of said tubes and to a second header at the outlet end of said tubes;

positioning said gas permeable tubes within the venae cavae of a patient;

connecting said first header to a source of oxygen enriched gas;

connecting said second header to a means for exhausting gas carried by said tubes;



passing said oxygen enriched gas through said gas permeable tubes at a rate of from 0.6 to 1.2 liters per minute and at a pressure of from 5 to 10 mm Hg such that blood flowing through said venae cavae is oxygenated as carbon dioxide is removed from said blood into said gas permeable tubes; and

applying controlled suction to said second header.

4,583,970

MILK SUCTION DEVICE

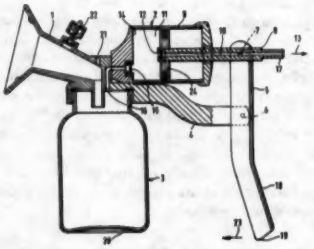
Hansjörg Kirchner, Markgröningen, Fed. Rep. of Germany, assignor to Kirchner & Wilhelm, Stuttgart, Fed. Rep. of Germany

Filed May 23, 1985, Ser. No. 737,176

Claims priority, application Fed. Rep. of Germany, May 25, 1984, 3419613

Int. Cl.[4] A61M *1/06*

U.S. Cl. 604—74 **6 Claims**



1. A milk suction device comprising: a funnel adapted to receive milk therethrough; a container connected to said funnel for receiving milk therefrom; a piston pump attached to said container for creating a suction therein to draw milk through said funnel; said piston pump comprising a cylinder, a piston movable within said cylinder and a hollow piston rod defining therethrough an aeration duct having one end in flow communication with said cylinder and an opposite end vented to the exterior of said cylinder, said piston being movable within said cylinder through a suction stroke and a return stroke; and a return valve connected at said one end of said aeration duct, said return valve being constructed as an aeration valve and being closed during said suction stroke of said piston.

4,583,971

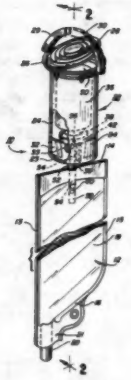
CLOSED DRUG DELIVERY SYSTEM

Jacques R. Bocquet, Brussels; Richard P. Goldhaber, Waterloo; Jean Kersten, Villers St. Amand; Jean-Marie Mathias, Nivelles, all of Belgium, and Stephen Pearson, Ingleside, Ill., assignors to Travenol European Research and Development Centre (TERADEC), Nivelles, Belgium

Filed Feb. 10, 1984, Ser. No. 578,908

Int. Cl.[4] A61J *1/00*

U.S. Cl. 604—82 **38 Claims**



1. A closed drug delivery system which comprises:

a flexible container having a liquid diluent therein, said flexible container having a delivery outlet;

a capsule including a relatively rigid wall coupled to said flexible container, said capsule having means for supporting a drug vial and flexible means for enabling movement of the drug vial relative to the supporting means;

a drug vial having a drug therein adapted to be mixed with said diluent, said drug vial being supported by said supporting means and being adapted for engagement by said flexible means;

means coupling said capsule to the interior of said flexible container, said coupling means including means for communicating with the interior of the drug vial, said communicating means being out of communication with the interior of the drug vial when the vial is in a first position supported by said supporting means, said communicating means being in communication with the interior of the drug vial when the vial has been moved relative to said supporting means and the vial is in another position within said capsule.

4,583,972

WOUND EVACUATOR

Robert R. Hunter, III, Westboro, Mass., and Robert E. Weston, Exeter, N.H., assignors to Complex, Inc., Hampton, N.H.

Filed May 18, 1984, Ser. No. 611,603

Int. Cl.[4] A61M *37/00*

U.S. Cl. 604—133 **6 Claims**

1. Wound evacuator, comprising:

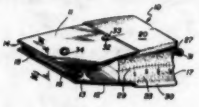
(a) two relatively thin plates of generally rectangular shape,

(b) a hinge joining the plates at one end edges,

(c) a spring located at the hinge for subjecting the plates to movement about the hinge from a first position in which the

plates lie closer together to a second position in which the plates are more separated, and

(d) a bag made of flexible material lying between the plates in the portions adjacent the opposite free end edges and subjected to expansion as the plates are subjected to the said movement from the first position to the second position, the bag being provided with pockets located on opposite sides, which pockets slide snugly over the portions of the plates adjacent the said free end edges.



2. Wound evacuator as recited in claim 1, wherein the bag is in teh general form of two opposed rectangular walls joined by two trapezoidal walls, so as to be generally wedge-shaped to conform to the shape of the space between the plates when the plates are in the said second position.

3. Wound evacuator as recited in claim 1, wherein the spring is a torsion spring that is concentric with a hinge pin lying between the plates and extending parallel to and spaced from the inner surfaces of the plates.

4,583,973

VISCOUS FLUID TIMED INFUSION DEVICE

Robert Humphrey, and Carl Biro, both of 2002 Utopia Parkway, Whitestone, N.Y. 11357

Filed Apr. 11, 1984, Ser. No. 599,076
Int. Cl.[4] A61M *5/20*
U.S. Cl. 604—135 **8 Claims**

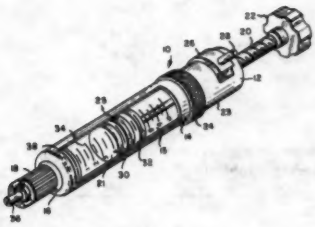
1. A viscous fluid timed infusion device comprising a cylindrical main housing, an orifice in one end of said housing, a plunger sealingly engaging inner side walls of said main housing and slidably therein, main spring means operatively positioned between said main housing and said plunger urging said plunger toward said orifice to force a fluid in said cylinder through said orifice, and a viscous fluid timing device independent of said oriface and operatively connected to said plunger for controlling rate of movement of said plunger towards said orifice in response to flow of viscous fluid through said timing device.

4,583,974

SYRINGE FOR BALLOON DILATION CATHETERS

Denis T. Kokernak, 86 Sylvia St., Arlington, Mass. 02174

Filed Apr. 4, 1984, Ser. No. 596,546
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—211 **4 Claims**



1. A syringe for use with a ballon catheter, said syringe comprising:

a housing containing a cylindrical chamber;

a plunger enclosed within said cylindrical chamber;

said housing having an output junction for fluid connection to said balloon catheter;

a threaded shaft attached to said plunger and extending axially from said housing;

a pivotable internally threaded latch which is mounted on said housing and thereby fixed against axial movement with respect to said housing and which can be selectively engaged with said threaded shaft for incremental movement of the plunger and disengaged from said threaded shaft for rapid axial movement of said plunger and shaft.

4,583,975

INDIRECT PIEZOELECTRIC DROP COUNTER AND METHOD

Michael O. Pekkarinen, Lincolnshire; Ludwig Wolf, Jr., Crystal Lake, and Walker Woodworth, Palatine, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 565,068, Dec. 23, 1983, abandoned. This application Mar. 29, 1985, Ser. No. 717,487
Int. Cl.[4] A61M *5/16*
U.S. Cl. 604—253 **3 Claims**

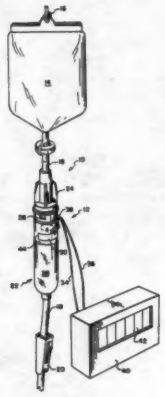
1. A method of detecting fluid drops from a fluid source, comprising:

directing drops of fluid onto a surface of accumulated fluid in a drip chamber;

providing a first piezoelectric film means coupled to said drip chamber for sensing and generating a signal as each drop impinges on said surface;

providing second differential piezoelectric film means cou-

pled to said chamber and spaced from said first piezoelectric film means to generate reference signals proportional



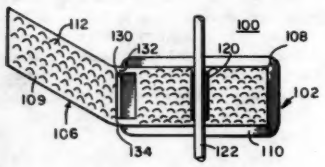
to noise, vibration or temperature changes to which the chamber is subjected.

4,583,976

CATHETER SUPPORT

Keith T. Ferguson, Scotch Plains, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 31, 1984, Ser. No. 615,624
Int. Cl.[4] A61M *25/02*
U.S. Cl. 604—174 **5 Claims**



1. A catheter support for securing a catheter to a living body comprising:

an anchoring pad having a body compatible adhesive carried by one side thereof;

a flexible strap comprising a layer of fastener material on one side thereof, a portion of said flexible strap being attached to a side of said anchoring pad;

said fastener material comprising a plurality of spaced apart resilient and deformable curved plastic elements which are arranged in a planar array with equal spacing of elements in each row of the array and with every other row offset from an adjacent row;

said fastener material on said portion of strap attached to said pad having a channel formed therethrough for receiving said catheter;

said fastener material divided into an area on said anchoring pad and a remaining area on said strap separated by a hinge area separate from said channel;

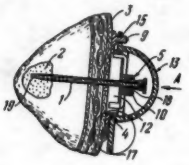
said flexible strap adapted to fold at said hinge area across said catheter in said channel to secure it to said pad when said remaining area of fastener material is pressed together with said area on said anchoring pad.

4,583,977

DEVICE FOR LENGTHY FIXATION OF A TUBE INTRODUCED INTO THE PATIENT'S BODY

Nikolai M. Shishov; Vladimir E. Zelenetsky; Nadezhda A. Demina; Ivan M. Bondarev; Alexandr N. Cherny; Alisa A. Ertli, all of Moscow; Semen I. Marina, Pushkino; Anatoly G. Avxentiev, Belgorod-Dnestrovsky; Stanislav N. Lepetchenko, Belgorod-Dnestrovsky, and Ivan P. Serzhantu, Belgorod-Dnestrovsky, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Meditsinskikh Polimerov, Moscow, U.S.S.R.

Filed Aug. 15, 1984, Ser. No. 640,822
Int. Cl.[4] A61M *5/32*
U.S. Cl. 604—174 **13 Claims**



1. A device for long-term fixation of a tube introduced into a patient's body, said device comprising:

a housing secured to the patient's body;

a flexible annular base of said housing;

securing means for securing said tube in said housing, said securing means including

a first bushing mounted stationary and coaxially with said housing and through which said tube is introduced into the patient's body;

at least two identical ribs, each rib connecting said bushing with said flexible annular base and each rib made so that in combination they define a cavity between the patient's body and said flexible annular base;

said cavity intended for sanitary and hygienic treatment of a skin integument portion formed around said tube introduced into the patient's body; and

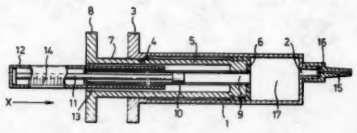
a cover closing said cavity and connected with said flexible annular base.

4,583,978

SYRINGE

Michael Porat; Amir Porat, both of 4 Hirschenberg Street, and Doron Lachish, 11 Ester Hamalka Street, all of Tel-Aviv, Israel

Filed Jan. 16, 1984, Ser. No. 571,192
Claims priority, application Israel, Jan. 23, 1983, 67736; Nov. 25, 1983, 70331
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—208 **13 Claims**



1. A syringe for storing medication and dispensing dosed quantities thereof, comprising a housing, a storage chamber in said housing, a dose chamber in said housing and in direct communication with said storage chamber, first piston means for introducing a fluid into said storage chamber and subsequently for introducing by pressure a predetermined volume of the fluid into said dose chamber, second piston means for expelling the volume of fluid from the dose chamber and from

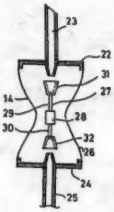
the housing, and means for preventing relative movement between said first piston means and said housing when said second piston means expels fluid from the dose chamber.

4,583,979

INFUSION DEVICES

Yoram Palti, 51 Ruth Street, Haifa, Israel

Filed Feb. 23, 1984, Ser. No. 582,718
Claims priority, application Israel, Dec. 14, 1983, 70447
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—256 **9 Claims**



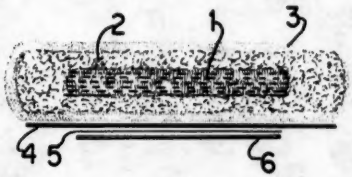
1. A drop-counting chamber for use in an infusion device, comprising a transparent or translucent resilient tubular sleeve having two ends and closed at each end by a hermetically bonded disk, inlet means connected to one of said disks and outlet means connected to the other of said disks, each of said inlet and outlet means having a fluid port member extending into the drop-counting chamber, said port members being located opposite one another and removable closure means within said chamber and engagable with said port members to close or open said port members, said closure means capable of simultaneously closing both of said port members.

4,583,980

SANITARY HYGIENE PRODUCTS HAVING ODOR-PREVENTING PROPERTIES

Werner Schneider, Krefeld-Bockum, and Scarlet Sustmann, Münster, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 524,829, Aug. 19, 1983, abandoned, which is a continuation of Ser. No. 288,787, Jul. 31, 1981, abandoned. This application Jan. 14, 1985, Ser. No. 691,715
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3030920
Int. Cl.⁴ A61F *13/16*
U.S. Cl. 604—359 **4 Claims**



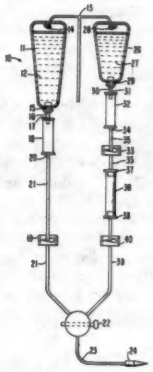
1. A sanitary hygiene product for the absorption of secretions containing urine and/or blood which contains in an absorption layer an odor-preventing amount of one or more esters of citric acid and/or acetylcitric acid with aliphatic alcohols with from 1 to 6 carbon atoms or alicyclic alcohols of from 4 to 6 carbon atoms, as an odor-preventing substance, the absorption layer being arranged in the center of the product and being surrounded by a layer of cotton wadding or milled staple rayon fluff.

4,583,981

PARENTERAL CONTROLLED THERAPY, USING A POROUS MATRIX WITH PARENTERAL AGENT

John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 542,466, Oct. 17, 1983, Pat. No. 4,493,702, which is a continuation of Ser. No. 325,206, Nov. 27, 1981, Pat. No. 4,432,756. This application Jan. 7, 1985, Ser. No. 689,537
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—80 **3 Claims**



1. A parenteral delivery set for administering a beneficial agent formulation to a warm-blooded animal, the delivery set comprising:

(a) a primary tube for the flow of a parenterally acceptable fluid therethrough;

(b) a secondary tube for the flow of a parenterally acceptable fluid therethrough;

(c) a formulation chamber in communication with the secondary tube, the formulation chamber comprising:

(1) a wall that surrounds an internal space;

(2) an inlet for letting fluid enter the formulation chamber;

(3) a beneficial agent delivery device in the formulation chamber, the delivery device comprising a matrix formed of a microporous material, and a beneficial agent distributed in the microporous material;

(4) an outlet for letting an agent formulation exit the formulation chamber; and,

(d) a common tube in communication with the primary tube for receiving fluid from the primary tube, and in communication with the secondary tube for receiving agent formulation from the secondary tube.

4,583,982

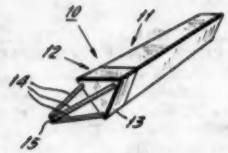
FLUID DISPENSER

David G. Vlock, 12 Fifth Ave., New York, N.Y. 10011

Filed Aug. 24, 1984, Ser. No. 643,912
Int. Cl.⁴ A61M *35/00*
U.S. Cl. 604—310 **12 Claims**

1. A fluid dispenser for applying a fluid to a body surface in a precise fashion, comprising a handle portion supporting at least three spaced-apart, prongs that meet at a pyramidal apex

to form a fluid containing cradle, said fluid held in said cradle by surface tension, said fluid dispenser discharging said fluid



from said cradle upon contact of said prongs to said body surface.

4,583,983

FEMALE URINARY DRAINAGE DEVICE

Carol J. Einhorn, 4740 N. Kenmore, Chicago, Ill. 60640, and Joann Stegmaier, 2440 Wingren #2012, Irving, Tex. 75062

Filed Oct. 25, 1983, Ser. No. 545,088

Int. Cl.[4] A61F 5/44

U.S. Cl. 604—329 **14 Claims**

1. A urinary drainage device for a female user comprising:

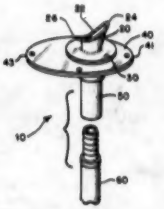
an elastomeric urethral tube having a longitudinal axis extending along the longitudinal length of the tube, a lower end and a slanted upper end shaped to conform to and seal around the urethral region of the user;

a first flat planar disc formed of an elastomeric material, said first disc defining a first central opening and shaped to mechanically engage the labia minora of the user;

a second oval shaped flat planar disc formed of an elastomeric material, said second disc defining a second central opening positioned in an offset manner in the second disc, said second disc defining a major and a minor axis and first and second peripheral ends on the major axis, said second opening situated nearer the first end than the second end, and said second disc shaped to mechanically engage the labia majora of the user;

said tube disposed within the first and second openings and secured to the first and second discs adjacent the first and second openings such that the first disc overlies the second disc;

said slanted upper end of the tube defining a posterior end



and an anterior end, said posterior end extending farther from the first disc in the axial direction along the axial length of the tube than the anterior end, and said tube oriented such that the posterior end of the tube is situated nearer the first end than is the anterior end of the tube;

said tube and discs cooperating to hold the slanted upper end of the tube in a sealing relationship against the urethral region of the user in a noninvasive manner;

said tube, first disc and second disc conformable to the anatomy of the user.

4,583,984

PROCEDURE FOR TREATING CELLULOSE DERIVATIVE FIBRES

Olli Turunen; Jouko Huttunen; Kurt Ekman; Vidar Eklund, and Leo Mandell, all of Porvoo, Finland, assignors to Neste Oy, Finland

PCT No. PCT/FI83/00028, § 371 Date Oct. 28, 1983, § 102(e) Date Oct. 28, 1983, PCT Pub. No. WO83/03433, PCT Pub. Date Oct. 13, 1983

PCT Filed Mar. 25, 1983, Ser. No. 552,050

Claims priority, application Finland, Mar. 30, 1982, 821106

Int. Cl.[4] D06M *1/02;* D01F *2/00;* C08B *15/06*

U.S. Cl. 8—125 17 Claims

1. Method of regulating the wet properties of cellulose carbamate fibres or filaments, which comprises

treating such fibres or filaments with a solution of an alkali or of an organic base of a concentration and at a temperature and for a period of time such that the number of carbamate groups in the cellulose carbamate is reduced without adversely affecting the properties of the resulting cellulose carbamate fibres or filaments which thus remain in solid form, thereby increasing wet strength and decreasing wet stretchability of the thus-treated fibres or filaments.

4,583,985

PROCESS FOR THE RECOVERY OF SOLVENTS IN THE TREATMENT OF TEXTILES

Ewald Preisegger, Nauheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 28, 1984, Ser. No. 625,455

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323727

Int. Cl.[4] D06L *1/00*

U.S. Cl. 8—137 2 Claims

1. A process for the recovery of solvents in the cleaning of textiles using organic solvents and in the imparting of finishes to textiles, which solvents are obtained in the drying phase and which are present in the form of a solvent vapor/air mixture after the liquid components have been pumped away and which are partially condensed out by cooling, the portions of solvent still remaining in the vapor state being subsequently adsorbed by active charcoal, wherein a saturation partial pressure of the solvent in the solvent vapor/air mixture of not more than 0.25 bar is set up and the fractions of solvent adsorbed in the active charcoal are desorbed by means of a solvent vapor-/air mixture of the same concentration as in the adsorption process and at temperatures of approx. 100° to 150° C.

4,583,986

CATALYZED BISMUTH DYE SYSTEM FOR HUMAN HAIR

Herbert Lapidus, Ridgefield, Conn., assignor to Combe Incorporated, White Plains, N.Y.

Continuation of Ser. No. 285,026, Jul. 20, 1981, abandoned. This application Nov. 13, 1981, Ser. No. 320,927

Int. Cl.[4] A61K *7/13*

U.S. Cl. 8—405 12 Claims

1. A composition for dyeing human hair comprising bismuth citrate, elemental sulfur, a thiosulphate selected from the group consisting of sodium thiosulphate and potassium thiosulphate, a complexing agent selected from the group consisting of triethanolamine and ammonia, a catalyst and usual additives and processing aids, where said catalyst is of a chemical structure having either an oxygen atom possessing a resonating double bond or an oxygen atom of an ether group attached to a carbon atom said catalyst having a high degree of solubility in water and a molecular weight from about 50–170.

4,583,987

METHOD FOR DYEING AND LUBRICATING SEWING THREADS IN A SINGLE BATH AND SUITED COMPOSITIONS FOR FINISHING

Jürgen Kurz, Im Bruhl 30, D-7409 DuBlingen, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 694,851

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1985, 3500168

Int. Cl.[4] D06M *15/66;* D06P *5/00*

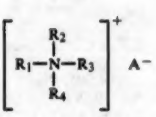
U.S. Cl. 8—495 11 Claims

1. A method for finishing sewing threads of synthetic yarns, natural yarns of core yarns with a lubricating agent, comprising applying the lubricating agent in the dyebath and simultaneously dyeing and lubricating in a single process step wherein the lubricating agent comprises the following components dispersed or dissolved in water:

(a) 1 to 80 weight percent silicone oil of viscosity 500 to 100,000 mPa·s at 25° C.;

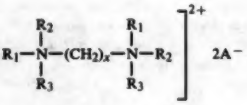
(b) 1 to 50 weight percent vegetable wax, animal wax, montan wax, mineral wax or polyolefin-wax, or a mixture of such waxes, each wax having a melting point of ≧35° C.;

(c) 0 to 20 weight percent of a quaternary ammonium compound of the formula



R_1=alkyl C_{12}–C_{22}
R_2=alkyl C_1–C_{22}
R_3=alkyl C_1–C_{22}
R_4=alkyl C_1–C_4
A=salt forming anion

and/or a diquaternary ammonium compound of the formula

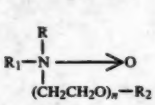


wherein R_1, R_2, R_3, and A are as defined above and x is 2 or 3,

and/or an alkylimidazolinium salt with an alkyl group of 12 to 22 carbon atoms;

(d) 1 to 10 weight percent of a fatty acid condensation product of a C_{12}–C_{22} fatty acid and an alkanolamine or polyamine in the form of a salt;

(e) 0 to 5 weight percent amine oxide of the formula



wherein R is C_{8-12}-alkyl or C_{8-12}-alkenyl, R_1 is C_{1-4}-alkyl, R_2 is H or C_{1-4}-alkyl and n is a number from 0 to 6;

(f) 1 to 10 of a non-ionic ethoxylated emulsifier based on a C_{12-22}-fatty alcohol or a -fatty acid or isotridecyl fatty acid ester, each etherified with 2 to 50 moles of added ethylene oxide;

(g) 0 to 10 weight percent a non-ionic emulsifier based on ethoxylated triglycerides; and

(h) 0 to 10 weight percent cationic emulsifier, based on a C_{12}–C_{22}-fatty amine etherified with 2 to 30 moles of added ethylene oxide.

4,583,988

PROCESS FOR DYEING MODIFIED POLYESTER FIBER TEXTILE MATERIAL IN ABSENCE OF CARRIER WITH WATER-INSOLUBLE REACTIVE DISPERSE DYES

Siegfried Müller, Kelkheim, and Hans-Peter Maier, Sulzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,743
Int. Cl.[4] D06P 1/38, 3/54, 5/02
U.S. Cl. 8—543 18 Claims

1. In a process for the carrier-free dyeing, with water-insoluble disperse dyestuffs, of fiber material containing a polyethylene terephthalate which has been modified by co-condensing with an hydroxycarboxylic acid, an aliphatic dicarboxylic acid or a polyethylene oxide in the form of a block copolymer, the improvement which comprises:

using, as a colorant, at least one disperse dyestuff which is free of COOH or SO_3H groups or both and which contains in the dyestuff molecule one or a plurality of groupings exhibiting polar character, each said polar grouping being a vinyl sulfone, dialkylaminosulfone, or acrylic acid radical bonded to an aromatic nucleus of the chromphore; in the case of a plurality of said polar groupings, said polar groupings being the same or different; and

fixing the dyestuff on the fiber from an aqueous dispersion at a pH of 5–10 by means of heat or by allowing the dyeings to stand.

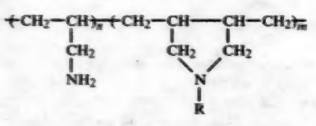
4,583,989

METHOD FOR IMPROVING COLOR FASTNESS: MONO- AND DI-ALLYLAMINE COPOLYMER FOR REACTIVE DYES ON CELLULOSE

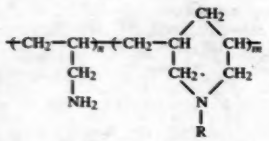
Toshio Ueda; Kenzi Kageno, both of Koriyama, and Susumu Harada, Tokyo, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 670,481
Claims priority, application Japan, Nov. 15, 1983, 58-214776
Int. Cl.[4] D06P 5/08
U.S. Cl. 8—543 7 Claims

1. A method for improving the color fastness of a dyed cellulosic fiber product which comprises treating a product dyed with a reactive dye with the aqueous solution of a copolymer of monoallylamine and a diallylamine derivative represented by the following formula (I) or (II) or with a salt of said copolymer:

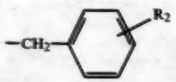


(I)



(II)

wherein R represents a group selected from the groups consisting of H, an alkyl group having 1 to 18 carbon atoms, a benzyl group, a group



wherein R_2 is an alkyl group having 1 to 18 carbon atoms, and a group $-CH_2CH_2OH$; and n and m independently represent a positive integer, provided that the ratio n/m is in the range from 95/5 to 5/95.

4,583,990

METHOD FOR THE BENEFICIATION OF LOW RANK COAL

Phillip E. McGarry, Palmerton, and David E. Herman, Jim Thorpe, both of Pa., assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 230,060, Jan. 29, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 510,994
Int. Cl.[4] C10L 1/32
U.S. Cl. 44—51 19 Claims

1. An improved process for the beneficiation of low rank coal, said process comprising the steps of:

(a) admixing pulverized low rank coal with a surface treating mixture comprised of water, a polymerizable monomer, a polymerization catalyst and a coal derived oil; and

(b) recovering the resulting benef:ciated coal.

4,583,991

NITROMETHANE FUEL COMPOSITIONS

Geoff J. Germane, Orem, Utah, and Gary L. Hess, Downers Grove, Ill., assignors to Angus Chemical Company, Northbrook, Ill.

Filed Jul. 17, 1985, Ser. No. 756,767
Int. Cl.[4] C10L 1/22
U.S. Cl. 44—72 13 Claims

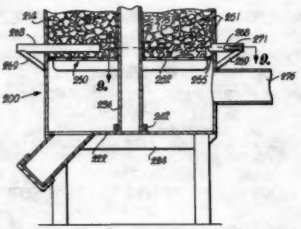
1. A composition useful as a fuel in an internal combustion engine comprising, by weight, from about 75 to about 99 percent of nitromethane and from about 1 to about 25 percent of an antidetonation additive selected from the group consisting of nitroethane, 2-nitropropane, and mixtures thereof.

4,583,992

BIOMASS GASIFIER AND CHARCOAL PRODUCER

Chester D. Rogers, Olathe, Kans., assignor to Buck Rogers Mfg. Co., Inc., Industrial Airport, Kans.

Filed Dec. 4, 1984, Ser. No. 678,178
Int. Cl.[4] C10J 3/42
U.S. Cl. 48—76 13 Claims



1. A gasifier for continuous conversion of biomass into charcoal and combustible gas, said gasifier comprising:

a hollow generator having an open top for receiving a continuous supply of said biomass and continuous, unimpeded gravitation of the biomass in the generator;

a generally horizontal, flat, slotted grate mounted in said generator and occupying substantially the entire cross-section of said hollow generator for rotation about an essentially upright axis and disposed to receive said biomass thereupon, presenting a char-bed of said biomass on the grate when the biomass is subjected to pyrolysis adjacent the grate;

a downdraft air supply pipe extending vertically downwardly into and through through the biomass in the generator and provided with tubular tuyeres in the generator

disposed to force a continuous supply of combustion-supporting air into and through said char-bed adequate to provide a high exothermic reaction rate and combustion efficiency and production of charcoal on the grate from said biomass;

a plurality of stationary members connected to the generator above the grate and extending into the char-bed for retarding rotation thereof and breaking the charcoal into separate lumps against the surfaces of which the air impinges,

said members being proximal to the grate for shearing the lumps against the slots of the grate to disintegrate the lumps into charcoal particles, and forcing the particles downwardly through the slots and substantially reducing the residence time of the char-bed in the generator; and

means for withdrawing said particles and said gas generated during pyrolysis from the generator beneath the grate.

4,583,993

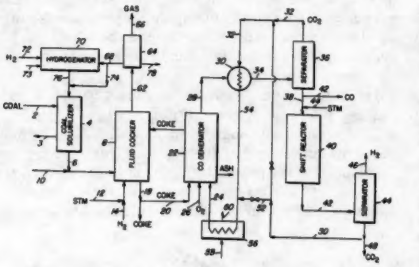
PROCESS FOR THE PRODUCTION OF CARBON MONOXIDE AND HYDROGEN FROM CARBONACEOUS MATERIAL

Nai Y. Chen, Titusville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 918,972, Jun. 26, 1978, abandoned, said Ser. No. 918,972, is a continuation of Ser. No. 791,765, Apr. 28, 1977, abandoned. This application Sep. 25, 1981, Ser. No. 305,675

Int. Cl.[4] C10J 3/54

U.S. Cl. 48—197 R **4 Claims**



1. A method for producing separate streams of hydrogen and carbon monoxide of relatively high purity from a char like product selected from the group consisting of coal, char product of coal solvation, char product of coal volatilization, solid decomposition products of tar sands and oil shale comprising carbonaceous material which comprises

passing a char product of fluidizable particle size comprising carbonaceous material and metal deposits which will promote the formation of CO obtained at an elevated temperature to a fluidized char particle carbon monoxide generation zone in admixture with preheated carbon dioxide wherein the primary source of endothermic reaction heat to form CO is supplied by said fluid char particles and said preheated carbon dioxide;

maintaining the metal deposit on said char particles in a reducing state by the presence of high CO concentration;

separating a product of said CO generation zone into a carbon monoxide rich stream and an unreacted carbon dioxide rich stream;

recovering a portion of the carbon monoxide thus produced as a product of the process;

passing another separated portion of said produced carbon monoxide in admixture with steam to catalytic water gas shift reaction zone maintained under conditions to produce hydrogen and carbon dioxide;

separating a hydrogen rich stream from a carbon dioxide rich stream produced in said shift reaction zone;

recycling carbon dioxide product of said shift reaction zone admixed with CO_2 separated from the CO product of said CO generator zone through indirect heating zones to heat the mixed CO_2 stream to an elevated temperature before passing said fluid char particle to the CO generation zone;

separating unreacted fluid char particles from said CO generation zone;

and passing the separated fluid char particles to a heating zone to maintain the heat of said particles at elevated temperature.

4,583,994

CYCLIC PROCESS FOR PRODUCING METHANE IN A TUBULAR REACTOR WITH EFFECTIVE HEAT REMOVAL

Albert C. Frost, Congers, and Chang-Lee Yang, Spring Valley, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 158,802, Jun. 12, 1980, Pat. No. 4,351,646. This application May 11, 1982, Ser. No. 377,029

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.[4] C10K 3/04

U.S. Cl. 48—197 R **5 Claims**

1. In a cyclic, essentially two-step process for the production of methane from carbon-monoxide-containing gas streams by (a) disproportionation of the carbon monoxide at a temperature of about 100°–350° C. in a catalyst-containing reactor to form carbon monoxide and an active surface carbon that is deposited on the surface of the disproportionation catalyst essentially without the formation of inactive coke thereon, (b) reaction of said active surface carbon with steam at about 100°–400° C. to form methane and carbon dioxide, and (c) passing additional carbon monoxide-containing gas over said catalyst from step (b) and repeating said steps (a) and (b) a cyclic basis, the improvement comprising removing the exothermic heat of reaction generated during each of said steps (a) and (b) from the catalyst bed, or a portion thereof essentially prior to the exposure of the catalyst bed, or said portion thereof, to the exothermic heat of reaction of the next succeeding step of the cyclic process such that said steps (a) and (b) are carried out between an initation temperature as low as on the order of about 230° C. and an upper temperature not exceeding on the order of about 310° C. with the essentially complete removal of all of the heat generated during each complete cycle, with said steps (a) and (b) being carried out in a catalyst-packed tubular reactor containing a cooling medium, and including passing the carbon monoxide-containing feed gas stream to said tubular reactor at an initiation temperature as low as on the order of about 230° C. and at a CO concentration of at least about 2.1 percent by volume, the temperature rise during the disproportionation step thereby being limited to less than about 80° C. and the reaction/heating front resulting from the exothermic heat of reaction traveling through the reactor tubes at a faster rate than the slower moving cooling front, with the disproportionation reaction heat front thereby being temporarily stored in the catalyst-containing tubular reactor, with the resulting higher temperature of the catalyst providing the driving force to dissipate heat through the walls of the tubes to said cooling medium provided in sufficient quantity to remove said heat, so that, at the end of disproportionation step (a), the inlet end of the catalyst bed has been cooled as low as the initiation temperature range prior to the commencement of step (b), the middle portion of the bed has been cooled to an intermediate temperature, and the effluent end of the catalyst bed is at the highest temperature but not exceeding said upper temperature of about 310° C., the catalyst just in front of the reaction/heating front of steaming step (b) having just been cooled down so that said steaming reaction/heating front continually approaches cooled catalyst, with the steaming reaction heat being temporarily stored in the catalyst-containing bed, with the resulting higher temperature of the catalyst providing the driving force to dissipate heat through the walls of the tubes to the cooling

medium, the next succeeding disproportionation reaction/-heating front thus approaching catalyst that has just cooled down so that said front approaches cooled catalyst, thereby avoiding the accumulation of heat over the course of consecutive processing cycles by the rippling of disproportionation and steaming fronts down the length of said reactor.

4,583,995

METHOD OF PRODUCING SYNTHESIS GAS

Lothar Winckler, Gladbeck; Klaus Fuhrmann, Dorsten; Ulrich Graeser, Haltern, and Peter Wenning, Dorsten, all of Fed. Rep. of Germany, assignors to Veba Oel Entwicklungs-Gesellschaft mbH., Gelsenkirchen, Fed. Rep. of Germany

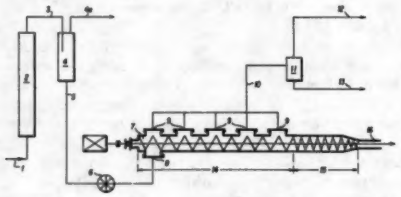
Filed Oct. 15, 1984, Ser. No. 660,972

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337621

The portion of the term of this patent subsequent to Apr. 22, 2003, has been disclaimed.

Int. Cl.[4] C10J *3/06*

U.S. Cl. 48—197 R **3 Claims**



1. A method of producing synthesis gas from flowable liquid containing coal hydrogenation residues, which comprises:

passing said liquid containing hydrogenation residue by means of a positive displacement pump system into a screw extruder consisting of an evaporation zone followed by a mechanical compression stage, said passing of the residue into the extruder occurring through a liquid space in the bottom of said extruder;

subjecting said liquid containing hydrogenation residue to distillation under conditions in which the pressure decreases from 0.6 bar to 0.01 bar or decreases from 0.1 bar to about 0.02 bar and the temperature increases from 200° C. to 400° C. or increases from 250° C. to 350° C. through the length of the evaporation zone of said extruder, thereby producing gases and vapors and viscous unvolatilized remaining material;

withdrawing said gases and vapors evolved;

repressurizing said unvolatilized remaining material; and

introducing said material directly into a gasification reactor as said material is obtained from said mechanical compression stage of said extruder.

4,583,996

APPARATUS FOR SEPARATING CONDENSABLE GAS

Jiro Sakata, and Minoru Yamamoto, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

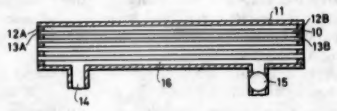
Filed Nov. 2, 1984, Ser. No. 667,745

Claims priority, application Japan, Nov. 4, 1983, 58-207112

Int. Cl.[4] B01D *53/22*

U.S. Cl. 55—16 **19 Claims**

1. An apparatus for separating a condensable gas by contacting a first surface of a membrane with a condensable gas-containing gas mixture and selectively passing said condensable gas therethrough, said apparatus comprising a hollow fiber porous glass membrane having been prepared from sodium borosilicate glass or potassium borosilicate glass, both having compositions that upon heat-treatment separate into a soft phase which leaches in high-temperature acid solution and a hard phase which does not leach in said acid solution, said soft phase having been leached with a high temperature acid solution, and said membrane being anisotropic and having a layer of a predetermined depth extending from one surface of said hollow fiber to a remaining portion of said membrane, said



layer having a multiplicity of micropores with a pore radius of up to 20 Å communicating in the thickness direction of said hollow fiber, the pore radius of the micropores in said layer being less than a pore radius of the micropores in said remaining portion of said membrane.

4,583,997

PROCESS FOR REDUCING THE HYDROXYL CONTENT OF OPTICAL WAVEGUIDES

Rudolf Staudigl, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Oct. 10, 1984, Ser. No. 659,285

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1983, 3338714

Int. Cl.[4] B01D *53/04*

U.S. Cl. 55—31 **8 Claims**

1. In a process for reducing the hydroxyl content of optical waveguides of the type including the step of manufacturing the optical waveguide in the presence of an auxiliary gas selected from the group consisting of inert and oxidizing gases, the improvement comprising the steps of:

(a) prior to said manufacturing step, pretreating the auxiliary gases with heavy water (D_2O); and

(b) subsequently drying the auxiliary gas so as to minimize the water content of the auxiliary gas, thereby, in turn, minimizing the possibility of the auxiliary gas serving as a source of hydroxyl groups when manufacturing said optical waveguides in the presence of said auxiliary gas.

4,583,998

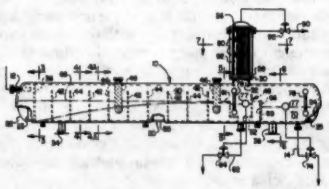
SEPARATOR SYSTEM AND PROCESS FOR GAS CONDITIONING SOLUTIONS

Laurance S. Reid, P.O. Box 1188, Norman, Okla. 73070, and Ector E. Barnhart, Oklahoma City, Okla., assignors to Laurance S. Reid, Norman, Okla.

Filed Nov. 19, 1982, Ser. No. 442,891

Int. Cl.[4] B01D *19/00*

U.S. Cl. 55—45 **41 Claims**



1. Apparatus for separating hydrocarbon oils from a gas conditioning process liquid, comprising:

an elongated generally cylindrical pressure vessel adapted to be disposed such that its longitudinal central axis extends substantially horizontally, a feedstream inlet conduit for introducing a mixture of oil dispersed in a gas conditioning liquid into one end of said vessel, a settling compart-

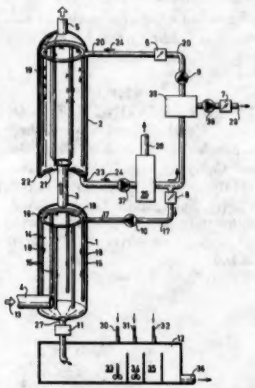
ment formed in said vessel extending toward an oil overflow weir in said vessel, conduit means for conducting liquid separated from said oil from said vessel, and means for controlling the settling of said mixture in said vessel sufficient to separate substantially all of said oil from said liquid including spaced apart baffle means in said settling compartment, said baffle means being positioned and arranged so as to substantially eliminate turbulent and vertically downward flow of said mixture while providing for continuous through flow of said mixture toward said oil overflow weir, said baffle means comprising a set of vertically extending plates spaced apart in said settling compartment along said central axis, said plates being configured such that alternate ones of said plates define a peripheral slot extending along and between each of said ones of said plates and a wall of said vessel defining said settling compartment, each of said slots extending at least from an edge of said ones of said plates toward the bottom of said settling compartment to provide for generally horizontal laminar stratified flow of said liquid through said settling compartment.

4,583,999

METHOD AND APPARATUS FOR FLUE-GAS CLEANING

Erik Lindahl, Appelboms väg 14, 186 00 Vallentuna, and Gunnar Hovsenius, Tunavägen 32, 194 51 Upplands Väsby, both of Sweden

Filed Aug. 15, 1984, Ser. No. 641,001
Claims priority, application Sweden, Aug. 31, 1983, 8304716
Int. Cl.⁴ B01D *53/14*
U.S. Cl. 55—68 **7 Claims**



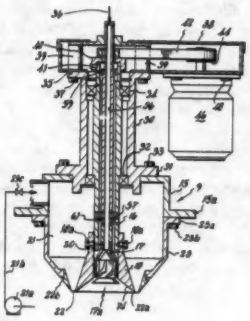
1. A method of flue-gas cleaning, comprising the separation of water-soluble substances from flue gases containing water vapour, where the flue gases are caused to directly contact atomized water in two or more separation steps, characterized in that the water necessary for the method during operation is extracted from the flue gases in a subsequent separation step in the flow direction of the flue gases, in which step the flue gases are cooled by atomized water to a temperature, at which the water in the flue gases in condensed out, which water is collected and thereafter both recirculated for being utilized in said subsequent separation step and introduced into a prior separation step in the flow direction of the flue gases, in which prior separation step the water is caused to be atomized and to meet uncleaned flue gases, the water soluble and potentially water soluble substances of which thereby are solved in the atomized water, and that the water thus impurified is discharged from said prior step and is collected to be further treated and wherein the water which is collected in said subsequent separation step and is recirculated, is cooled by a cooler, located, in the flow direction, after the vessel of the subsequent separation step but before introduction into said prior separation step.

4,584,000

LIQUID SPRAYING

Graham J. Guest, Wolverhampton, England, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 8, 1984, Ser. No. 669,498
Claims priority, application United Kingdom, Nov. 17, 1983, 8330663
Int. Cl.⁴ B05B *3/10*
U.S. Cl. 55—73 **30 Claims**



1. A spray device comprising:
(a) a massive axially symmetrical spray cup having an outer rim and an interior surface;
(b) means for rotating the cup;
(c) stationary distribution means, arranged symmetrically with respect to the cup, for directing liquid onto the interior surface of the cup and for providing a film of liquid on the interior surface preparatory to directing the liquid from the surface past the outer rim; and
(d) means for supplying a gas stream to impact the liquid immediately beyond the rim to produce a spray of liquid droplets; the distribution means comprising:
(e) a downstream duct portion; and
(f) stationary swirl means for providing a swirl component of motion in the liquid being directed onto the extended surface; the swirl means comprising:
(g) a stationary swirl member axially symmetrically located within the downstream duct portion of the distribution means, and wherein an annular passage is defined between the swirl member and the duct portion, and said member comprising:
(h) a plurality of symmetrically arranged swirl blades; and
(i) an axially symmetrical upstream conical portion with the apex of the cone leading with respect to the liquid flow.

4,584,001

MODULAR OXYGEN GENERATOR

Fernand J. Dechene, New Britain, Conn., assignor to VBM Corporation, Louisville, Ky.

Continuation of Ser. No. 521,711, Aug. 9, 1983, abandoned. This application Mar. 11, 1985, Ser. No. 710,138
Int. Cl.⁴ B01D *53/04*
U.S. Cl. 55—162 **11 Claims**

1. A compact, modular oxygen separating apparatus comprising:
(a) a housing which surrounds and defines an interior housing space, the housing including a distribution module mounting means, an electrical control panel mounting means, and a molecular seive bed supporting means;
(b) a gas distribution module including:

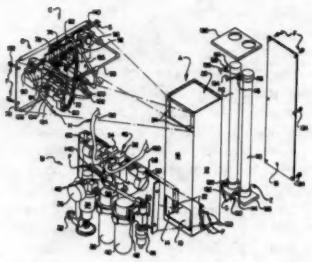
(i) a distribution module mounting panel which is configured to be selectively mounted in and removable from the housing distribution module mounting means,

(ii) a pressure regulator means for regulating incoming gas pressure, the pressure regulator means being mounted to the distribution module mounting panel for mounting in and removal from the housing therewith,

(iii) a water trap means for removing water from the incoming gas, the water trap means being mounted to the distribution module mounting panel to be mounted in and removed from the housing therewith and being operatively connected in pneumatic communication with the pressure regulator means,

(iv) a filter means for filtering the incoming gas, the filtering means being mounted to the distribution module mounting panel to be mounted in and removed from the housing therewith and being connected in pneumatic communication with the pressure regulating means and the water trap means,

(v) a crossover valve means for alternately channelling the incoming gas to one of first and second crossover valve outlet ports and for operatively connecting the other of the first and second crossover valve outlet ports with a waste gas discharge port, the crossover valve means being mounted to the distribution module mounting panel to be mounted in and removed from the housing therewith and being connected in pneumatic



communication with the pressure regulator means, the water trap means, and the filter means to receive the incoming gas therefrom,

whereby, the gas distribution module including the pressure regulator means, the water trap means, the filter means, and the crossover valve means is mounted in and removed from the housing as a single unit;

(c) a control module including:

(i) a control module mounting panel which is configured to be selectively mounted in and removable from the housing control panel mounting means,

(ii) a plurality of electrical components including an electrical timer means for controlling operation of components of the oxygen separating apparatus including cyclical operation of the crossover valve means, the electrical components being mounted on the control module mounting panel and being electrically interconnected with each other, such that the electrical components are mountable in and removable from the housing as a unit; and,

(d) a bed module including a plurality of beds of physical separation material that are selectively mountable in and removable from the housing molecular sieve bed supporting therefore as a unit, the beds being pneumatically connected with the crossover valve means first and second outlet ports to receive incoming gas therefrom and with an oxygen outlet for directing oxygen rich gas thereto.

4,584,002

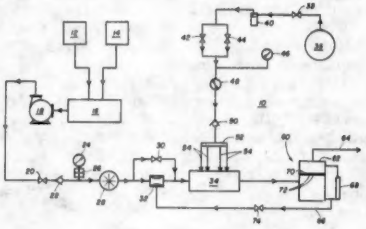
RECIRCULATING FOAM GENERATOR

Bruce M. Cox, and William W. Pattison, Jr., both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 22, 1981, Ser. No. 276,218

Int. Cl.[4] C09B *3/60*

U.S. Cl. 55—257 PP **9 Claims**



1. Apparatus for enhancing the quality of a foam product generated by a foam generator comprising, in combination with a foam generator:

a foam separator adapted to remove liquid and low-quality foam components from a foam product introduced therein, said foam separator including a pressure vessel having apertured separator plate means therein, a foam product inlet line to said pressure vessel, a high-quality foam discharge line from said pressure vessel, and a drain line from said pressure vessel; and

injection means on a liquid inlet line of said foam generator, said drain line leading to said injection means.

4,584,003

APPARATUS FOR TREATING DUST-CONTAINING GAS

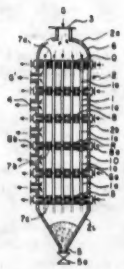
Noriyuki Oda, Chiba; Haruo Watanabe, Funabashi, and Tomohiro Morishita, Takasago, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 2, 1984, Ser. No. 606,199

Claims priority, application Japan, May 6, 1983, 58-78223; Jun. 7, 1983, 58-100280; Sep. 20, 1983, 58-172152

Int. Cl.[4] B01D *50/00, 39/20*

U.S. Cl. 55—269 **17 Claims**



1. Apparatus for treating dust-containing, high-temperature gas to separate the dust from the gas, said apparatus comprising:

(a) a generally tower-shaped, vertically oriented container comprising an upper case containing a gas distribution chamber, a middle case, and a lower case which functions as a dust hopper;

(b) an inlet for dust-containing gas in fluid communication with the gas distribution chamber in said upper case;

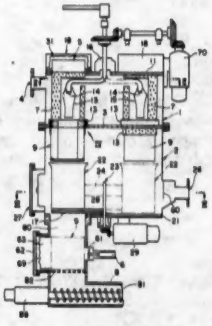
(c) a discharging port for dust located at the bottom of said lower case;
(d) a generally horizontal upper tube sheet disposed in said container in a gas-tight manner between said upper case and said middle case;
(e) a generally horizontal lower tube sheet disposed in said container in a gas-tight manner between said middle case and said lower case;
(f) at least one generally horizontal middle tube sheet disposed in said container between said upper and lower tube sheets;
(g) a plurality of vertically disposed, horizontally spaced filtration tubes made of a solid porous material disposed in said container and extending from said upper tube sheet to said lower tube sheet through said at least one generally horizontal middle tube sheet, each of said filtration tubes having an open upper end received in a gas-tight manner in said upper tube sheet by a gas tight connection and in fluid communication with the gas distribution chamber in said upper case and an open lower end received in a gas-tight manner in said lower tube sheet by a gas tight connection and in fluid communication with the dust hopper in said lower case, each of said plurality of filtration tubes being formed of a plurality of unit filtration tubes which are coaxially disposed in a gas-tight manner by a gas tight connection;
(h) at least one clean gas outlet in said middle case, said at least one clean gas outlet providing fluid communication between the exterior of said middle case and the interior of said middle case outside said filtration tubes;
(i) a passage for coolant disposed in at least some of said tube sheets;
(j) an inlet for coolant in fluid communication with each of said passages for coolant; and
(k) an outlet for coolant in fluid communication with each of said passages for coolant.

4,584,004

DUST COLLECTOR

Fumiaki Komatsu; Seiichi Hirano, both of Kobe, and Hiromi Tanabe, Hyogo, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Sep. 28, 1983, Ser. No. 536,723
Claims priority, application Japan, Sep. 28, 1982, 57-170199
Int. Cl.⁴ B01D 46/00
U.S. Cl. 55—422 **8 Claims**



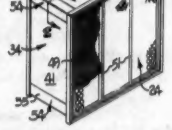
1. A dust collector for collecting of radioactive particles, comprising:
a housing;
a first filter positioned in said housing;
a partition plate positioned in said housing and dividing said housing into upper and lower chambers, said upper chamber having a discharge port for a clean gas and a filter supply port formed therein, and said lower chamber having an inlet port for a gas to be cleaned and a filter discharge port formed therein;
filter holder means extending through said partition plate supporting said first filter and enabling a second filter to be automatically installed thereto from above and allowing said first filter to be withdrawn therefrom downwardly and to support said second filter in an operable position;
movable guide means positioned in said lower chamber for receiving said first filter withdrawn from said filter holder means; and
means for moving said movable guide means.

4,584,005

HIGH EFFICIENCY PARTICULATE AIR FILTER AND METHOD OF FABRICATING SAME

Thomas T. Allan, and Robert V. Cramer, both of Washington, N.C., assignors to Flanders Filters, Inc., Washington, N.C.

Filed Jun. 27, 1984, Ser. No. 625,304
Int. Cl.⁴ B01D 46/10
U.S. Cl. 55—499 **23 Claims**

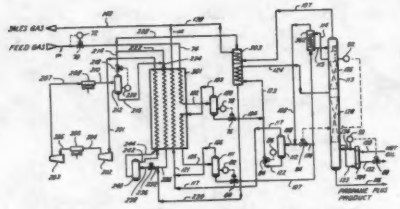


16. In a frame adapted to surround and sealably support a generally rectangular filter pack or the like and which comprises four separate side panels which are interconnected in an end to end, rectangular arrangement, the improvement wherein the adjacent end edges of adjacent side panels are effectively sealed along their interface and wherein
each of said separate side panels of said frame includes opposite side edges extending in the lengthwise direction, opposite end edges, inner and outer faces, and at least one pair of channel forming means overlying the outer face of said panel and extending in the lengthwise direction and cooperating with said outer face of said panel to define a lengthwise extending slot between said pair of channel forming means, and with the slot of each side panel communicating in right angles relationship with the slots of the adjacent side panels, and
at least one conrer plate interconnecting each of the adjacent end edges of adjacent side panels, with each of said corner plates comprising a pair of flanges disposed at right angles to each other in cross section and so as to define a bight at the intersection of the flanges, and a recess formed in such corner plate which extends along substantially the entire length of said bight and continuously along at least the medial portion thereof, with said recess having a sealing material therein, and with the flanges being closely received within respective ones of the slots of the associated side panels to interlock the corners and such that the sealing material serves to seal the adjacent end edges of the adjacent side panels.

4,584,006
PROCESS FOR RECOVERING PROPANE AND HEAVIER HYDROCARBONS FROM A NATURAL GAS STREAM

Fred Apffel, Houston, Tex., assignor to Flexivol, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 356,918, Mar. 10, 1982, Pat. No. 4,456,460. This application Oct. 3, 1983, Ser. No. 538,290
Int. Cl.[4] F25J 3/02
U.S. Cl. 62—30 6 Claims



1. A process for separating ethane and lighter components from substantial amounts of heavier naturally occurring hydrocarbons in a mixed gas, comprising:

A. Cooling the mixed gas inlet stream in an indirect heat exchanger with a mixed component refrigerant having at least three components with boiling points corresponding to the condensing points of the heavier hydrocarbons of the mixed gas;

B. Separating a portion of the ethane and lighter components from the propane and heavier components through a series of intermediate separation stages;

C. Cooling the mixed gas intermediate stream in an indirect heat exchanger with such refrigerant;

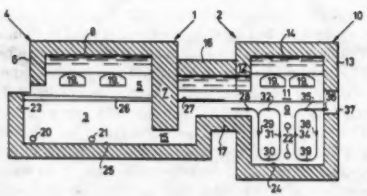
D. Separating the ethane and lighter components from substantial amounts of heavier naturally occuring hydrocarbons of the mixed gas in a distillation column using a liquid lighter component portion as a second refrigerant to provide cooling for the intermediate mixed gas in indirect heat exchange; and

E. Controlling the amount of cooling of such mixed gas intermediate stream by such liquid lighter component portion of the distillation column by the temperature of such liquid lighter component portion of the distillation column, the set point of the temperature being set for propane recovery.

4,584,007
APPARATUS FOR MANUFACTURING GLASS

Motoharu Kurata, Tokyo, Japan, assignor to Asahi Glass Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,895
Claims priority, application United Kingdom, Jan. 28, 1984, 8402297
Int. Cl.[4] C03B 5/225
U.S. Cl. 65—337 22 Claims



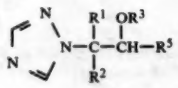
1. Apparatus for manufacturing glass, comprising: a continuous glass-melting tank furnace having a melting zone for receiving and melting raw batch material, and a refining zone for delivering molten refined glass, said furnace including melting means defining a melting compartment for providing said melting zone, said melting compartment having a downstream end with a shadow wall at said downstream end, said melting means including a melting tank and a superstructure; refining means defining a refining compartment having an upstream end for providing said refining zone, said refining means including a refining tank and a superstructure with a wall at said upstream end of said refining compartment; a cover constituting a shadow arch having sides, said melting and refining compartments being disposed to either side of said shadow arch, said shadow arch cover extending from said shadow wall at the downstream end of the melting compartment to said upstream end wall of the refining compartment superstructure, there being a passage located beneath the shadow wall giving communication between the tanks; and a sill positioned between the shadow wall and said refining tank, said sill having a top positioned at a level at least as high as the top of the passage beneath the shadow wall.

4,584,008
ALDOL ADDUCTS CONTAINING TRIAZOLE GROUPS

Richard E. Cherpeck, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 398,048, Jul. 14, 1982, abandoned. This application Sep. 20, 1984, Ser. No. 653,749
Int. Cl.[4] A01N 43/50, 43/653; C07D 233/60, 249/08
U.S. Cl. 71—76 21 Claims

1. A compound of the formula:



wherein

R^1 is isopropoxycarbonyl, t-butoxycarbonyl, or neopentoxycarbonyl;

R^2 is hydrogen, methyl or ethyl;

R^3 is hydrogen or a compatible cation;

R^5 is 2,4-dihalophenyl.

14. A method for controlling fungi which comprises contacting said fungi or their growth environment with a fungicidally effective amount of a compound of claim 1.

20. A method for advantageously altering the growth pattern of plants which comprises contacting the foliage or stems or the growth medium of such plants with a plant growth regulating effective amount of the compound of claim 1.

4,584,009
HERBICIDAL COMPOSITIONS CONTAINING SALINOMYCIN

Meiro Adachi, and Kenji Hamada, both of Kanagawa, Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 13, 1984, Ser. No. 681,059
Claims priority, application Japan, Dec. 15, 1983, 58-237130
Int. Cl.[4] A01N 43/08
U.S. Cl. 71—88 7 Claims

1. A method of controlling weeds comprising contacting said weeds with a herbicidally effective amount of a compound selected from salinomycin and its herbicidally effective esters and salts.

4,584,010

METHOD FOR CONTROLLING WEEDS IN PADDY RICE

Shunji Takeda, Yokohama, Japan, and Takeshi Yuyama, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 2, 1983, Ser. No. 547,974
Int. Cl.[4] A01N *43/48, 43/40, 37/00*
U.S. Cl. 71—92 13 Claims

1. A method for controlling weeds in paddy fields of Japonica rice plants consisting essentially of applying to the locus of said weeds an herbicidally effective amount of the herbicidal compound methyl 2-[((4,6-dimethoxypyrimidin-2-yl)aminocarbonyl)aminosulfonyl]-methyl benzoate and an antidotally effective amount of an antidotal compound selected from S-(4-chlorobenzyl)N,N-diethylthiolcarbamate and S-(1-methyl-1-phenethyl)-piperidine-1-carbothioate.

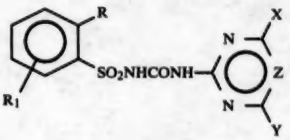
4,584,011

TRIAZINYL-AMINO CARBONYL-BENZENE SULFONAMIDES

Gerald E. Lepone, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 397,655, Jul. 26, 1982, Pat. No. 4,528,024, which is a continuation-in-part of Ser. No. 300,501, Sep. 9, 1981, abandoned. This application Apr. 3, 1985, Ser. No. 719,439
Int. Cl.[4] C07D *251/42, 251/46, 251/16;* A01N *43/66*
U.S. Cl. 71—93 15 Claims

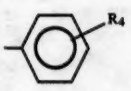
1. A compound selected from



wherein

R is $S(O)_nCH(R_2)$ A;

A is $OCH_2CH_2OCH_3$, $CH_2OCH_2CH_2OCH_3$, CO_2R_3, $CH_2CO_2R_3$, CN, CH_2CN,



CH_2OH, $CH(OH)CH_3$, CH_2CH_2OH, $C(O)CH_3$, $CH_2C(O)CH_3$, CHO, $CH(OCH_3)_2$ or

R_1 and R_4 are independently H, F, Cl, Br, CH_3, OCH_3, CF_3 or NO_2;

R_2 is H or CH_3;

R_3 is C_1–C_2 alkyl;

n is 0, 1 or 2;

X is CH_3, or OCH_3;

Y is CH_3, C_2H_5, CH_2OCH_3, OCH_3, OC_2H_5; and Z is N; and their agriculturally suitable salts.

6. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

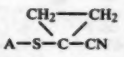
4,584,012

1-PHENYLTHIO-1-CYCLOPROPANECARBONITRILE AND SUBSTITUTED PHENYLTHIO DERIVATIVES THEREOF AS CROP PROTECTANTS

Rajendra K. Singh, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 440,770, Nov. 10, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,148
Int. Cl.[4] A01N *43/70;* C07C *121/66*
U.S. Cl. 71—93 32 Claims

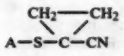
1. A compound having the structural formula:



wherein A is selected from the group consisting of naphthalenyl, tetrahydronaphthalenyl, benzodioxol, and

wherein X is independently selected from the group consisting of halogen, haloalkyl, alkyl, alkenyl, alkoxy, alkylthio, alkylcarbonyl, alkylalkenyl, and cycloalkyl; and n is a whole number from 1 through 5.

15. A method of reducing injury to crop plants due to the application thereto of at least one weed herbicide which comprises applying to the plant locus a safening-effective amount of at least one compound having the structural formula:



wherein A is selected from the group consisting of naphthalenyl, tetrahydronaphthalenyl, benzodioxol, and

wherein X is independently selected from the group consisting of halogen, haloalkyl, alkyl, alkenyl, alkoxy, alkylthio, alkylcarbonyl, alkylalkenyl, and cycloalkyl; and n is 0 or a whole number from 1 through 5.

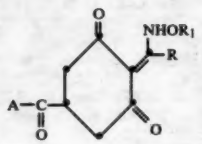
4,584,013

CYCLOHEXANEDIONECARBOXYLIC ACID DERIVATIVES WITH HERBICIDAL AND PLANT GROWTH REGULATING PROPERTIES

Hans-Georg Brunner, Lausen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 14, 1984, Ser. No. 610,222
Claims priority, application Switzerland, May 18, 1983, 2693/83; Dec. 19, 1983, 6747/83
Int. Cl.[4] C07C *69/74;* A01N *43/40*
U.S. Cl. 71—94 22 Claims

1. A method of selectively controlling weeds pre- or post-emergence in crops of useful plants, which comprises applying to said useful plants or to the locus thereof an effective amount of a cyclohexanedionecarboxylic acid derivative of the formula



wherein

A is an $-OR_2$ or $-NR_3R_4$ radical,

R is C_3–C_6cycloalkyl,

R_1 is C_1–C_6alkyl, C_1–C_6haloalkyl, C_3–C_6alkenyl, C_3–C_6haloalkenyl or C_3–C_6alkynyl,

R_2, R_3 and R_4 are each independently hydrogen, C_1–C_6alkyl, C_1–C_6haloalkyl, C_2–C_{10}alkoxyalkyl, C_2–C_{10}alkylthioalkyl; C_3–C_6alkenyl which is unsubstituted or substituted by halogen, C_1–C_4alkoxy or C_1–C_4alkylthio; C_3–C_6alkynyl; phenyl or C_1–C_6aralkyl, wherein the phenyl nucleus is unsubstituted or substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4haloalkyl, nitro or cyano, or

R_3 and R_4, together with the nitrogen atom to which they are attached, form a 5- or 6-membered heterocyclic ring system which may contain an additional oxygen or sulfur atom in the ring, or a metal or ammonium salt thereof; or of a composition containing said derivative.

4,584,014

ETHYLIDENEAMINOOXYACETIC ACIDS AND ESTERS

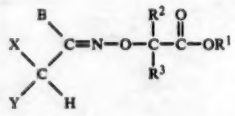
Dennis R. Patterson, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 2, 1984, Ser. No. 626,945

Int. Cl.⁴ A01N *37/00*; C07C *101/02*, *109/106*

U.S. Cl. 71—113 **13 Claims**

10. A method for combatting weeds comprising applying to the surface of the growth medium through which the weeds are to emerge or to the weeds a herbicidally effective amount of a compound of the formula



wherein

R^1 is hydrogen; (C_1–C_6)alkyl; (C_3–C_8)cycloalkyl; ((C_1–C_3)alkoxy)$_n$(C_1–C_6)alkyl, ((C_1–C_3)alkoxy)$_n$aryl, wherein n is 0 or 1 and the aryl may be substituted with up to three substituents each independently selected from halogen, (C_1–C_6)alkoxy, cyano and trifluoromethyl groups; phenyl(C_1–C_6)alkyl, aryl, or agronomically acceptable cations;

R^2 and R^3 are each independently hydrogen, optionally substituted (C_1–C_6)alkyl, optionally substituted (C_3–C_8)cycloalkyl, optionally substituted phenyl(C_1–C_2)alkyl, wherein the substituents are up to three independently selected from halogen, (C_1–C_6)alkoxy, cyano or trifluoromethyl group, carboxy or an agronomically acceptable salt thereof, (C_1–C_6)alkoxycarbonyl or phenyl group;

X is a hydrogen, fluoro, bromo, chloro or iodo atom;

Y is hydrogen, fluoro, bromo, iodo(C_1–C_6)alkyl, (C_3–C_8)cycloalkyl, carboxy or agronomically acceptable salts thereof, (C_1–C_6)alkoxycarbonyl, phenyl(C_1–C_6)alkyl, (C_2–C_6)alkenyl, (C_2–C_6)alkynyl or a phenyl group optionally substituted with up to three substituents independently selected from halogen, trifluoromethyl, (C_1–C_6)alkoxy, nitro, (C_1–C_6)alkoxycarbonyl, (C_1–C_6)alkyl and aryl and wherein Y is an alkyl, cycloalkyl or phenylalkyl group it may be substituted with up to three substituents independently selected from halogen, trifluoromethyl, cyano and (C_1–C_6)alkoxy group; and

B is hydrogen, carboxy or agronomically acceptable salts thereof, (C_1–C_6)alkoxycarbonyl, methylene ($—CH_2R^4$) or CZZ^1Z^2 group wherein R^4 is a (C_1–C_6)alkyl or (C_2–C_6)alkenyl group and Z, Z^1 and Z^2 are each independently a hydrogen, fluoro, bromo, chloro or iodo atom.

4,584,015

PROCESS AND SYSTEM FOR THE PRODUCTION OF VERY PURE ALLOYS

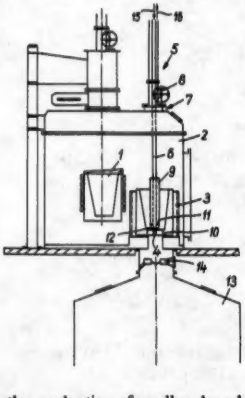
Jürgen Hartwig, Essen; Johannes Jachowski, Duisburg, and Paul Pant, Essen, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Fed. Rep. of Germany

Filed Sep. 25, 1984, Ser. No. 654,087

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1983, 3334733

Int. Cl.⁴ C22B *4/00*; C21C *7/10*

U.S. Cl. 75—10 V **14 Claims**



1. Process for the production of an alloy, by which a starting material is treated in a vacuummelting assembly and subsequently cast comprising the steps of:

(a) melting the alloy in an induction crucible and vacuum treating the melt in the induction crucible during induction heating,

(b) pouring the resulting melt into a second melt crucible contained in the melt assembly,

(c) subjecting the melt, which is in the form of a liquid bath, to a refining treatment in the second melt crucible, during which the entire melt is brought to a casting temperature and the bath in the second melt crucible is maintained without movement until impurities have risen,

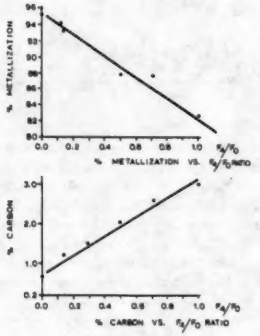
(d) pouring the melt, at a constant temperature, out of an orifice which is under the surface of the bath, and

(e) terminating the pouring from the second melt crucible, before the impurities which have risen to the surface of the bath can flow out with the bath.

4,584,016
METHOD FOR CONTROLLING METALLIZATION AND CARBURIZATION IN THE REDUCTION OF METAL ORES TO SPONGE IRON

Jorge O. Becerra-Novoa, Apodaca; Francisco Cantu-Hernandez, and Enrique R. Martinez-Vera, both of Monterrey, all of Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Continuation of Ser. No. 360,902, Mar. 23, 1982, abandoned.
This application Nov. 2, 1984, Ser. No. 668,173
Int. Cl.[4] C21B *13/02*
U.S. Cl. 75—35 6 Claims



1. A method of operating a vertical moving bed reduction reactor for reducing iron ore to sponge iron, said reactor having a reduction zone in the upper portion thereof within which said ore is reduced by a hot reducing gas flowing therethrough at a temperature between 700° C. to 1000° C. wherein the reduction by carbon monoxide and hydrogen contained in said reducing gas is promoted, and having a cooling zone in the lower portion thereof within which the reduced ore is cooled to a temperature below 200° C. and wherein carburization of the reduced ore by carbon monoxide in the cooling gas flowing therethrough is promoted, said reaction zone forming a part of the gas flow loop through which the reducing gas is recycled to the reduction zone and in which the recycled gas passes through a cooler to remove water therefrom and through a carbon dioxide removal unit to remove carbon dioxide therefrom, and a heater to reheat the gas before it re-enters the reduction zone, said cooling zone forming part of a cooling gas loop through which the externally-cooled gas is recycled to said cooling zone, said method comprising the steps of supplying a predetermined flow of fresh reducing gas largely composed of hydrogen and carbon monoxide as a first stream, splitting said first stream into a second stream fed to said reducing gas loop and a third stream fed to said cooling gas loop, maintaining the flow rate of said first stream substantially constant, and varying the flow ratio of said second stream to said third stream to increase the degree of metallization and decrease the degree of carburization of the product sponge iron or to decrease the degree of metallization and increase the degree of carburization of the product sponge iron.

4,584,017
METHOD FOR PRODUCING METALLIC LEAD BY DIRECT LEAD-SMELTING

Björn K. V. Lindquist, and Stig A. Petersson, both of Skelleftehamn, Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Jan. 29, 1985, Ser. No. 696,096
Claims priority, application Sweden, Feb. 7, 1984, 8400624
Int. Cl.[4] C22B *13/00*
U.S. Cl. 75—77 24 Claims

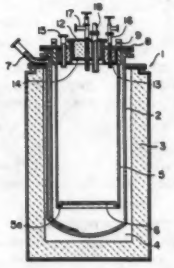
1. A method for producing metallic lead from lead-containing starting materials comprising:

(a) smelting the lead-containing starting material under oxidizing conditions to form a lead-containing oxidic melt;
(b) reducing the oxidic melt to extract metallic lead therefrom with a solid carbonaceous reduction agent and in the presence of a solid carbonate-containing material; and
(c) recovering molten lead wherein at least one of the amount of reduction agent and the length of the reducing period is less than in the absence of the carbonate-containing material.

4,584,018
METHOD FOR PRODUCTION OF REFRACTORY METAL FROM A CHLORIDE THEREOF

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Division of Ser. No. 477,405, Mar. 21, 1983, Pat. No. 4,527,778.
This application Feb. 15, 1985, Ser. No. 702,087
Claims priority, application Japan, Apr. 6, 1982, 57-56041
Int. Cl.[4] C22B *34/14*
U.S. Cl. 75—84.5 3 Claims



1. A method for producing of a refractory metal from a chloride thereof, comprising:

providing a conversion assembly comprising an elongated cylindrical member with an open top and a closed bottom, another cylindrical member open at its top and bottom ends but having a grid plate detachably supported adjacent the bottom end thereof, said cylindrical members constituting axially arranged outer and inner vessels respectively, a first top cover joined on respective upper ends of said outer and inner vessels, furnace means surrounding said outer vessel, conduit means for feeding raw refractory metal chloride to said inner vessel, and further tube means opening in the outer vessel adjacent the bottom thereof for discharging fluids therefrom;

holding fused magnesium in said conversion assembly, the amount of magnesium being such that its level is above said grid plate;

feeding raw refractory metal chloride to the inner vessel thus initiating a reaction with the magnesium therein to form the refractory metal product and magnesium chloride byproduct;

discontinuing the feeding of raw refractory metal chloride to terminate the conversion step at a time when a portion of the magnesium remains unconsumed whereby fused magnesium overlies the magnesium chloride byproduct;

discharging, from the inner vessel, the magnesium chloride byproduct at least partially in the liquid state so that the level of fused magnesium overlying the byproduct is lowered to the lower portion of the conversion assembly;

cooling said inner vessel to form a mass comprising product, byproduct and magnesium;

removing, with said first top cover attached to said inner vessel, said inner vessel from the outer vessel of said conversion assembly;

providing a purification assembly comprising an elongated

vertical cylindrical retort comprising a coolable upper portion and a heatable lower portion, a cylindrical member open at each end thereof constituting a further inner vessel coaxially arranged inside the upper portion of said retort, a further top cover joined on respective upper ends of the upper portion of said retort and further inner vessel, furnace means for heating the retort lower portion, water jacket means for cooling the retort upper portion, said inner and further inner vessels being of a common construction to each other, and the top cover of the purification assembly being secured air-tightly but detachably to the upper portion of said retort and to the further inner vessel by mechanical means which is also capable of securing the further top cover to the outer and inner vessels respectively, of the conversion assembly;

placing, with the retort upper portion removed, but with the first top cover secured to said inner vessel, said inner vessel in the retort lower portion;

removing the top cover from said inner vessel;

securing the retort upper portion on top of the lower retort portion, said upper retort portion comprising said further inner vessel and said further top cover, all assembled in advance;

degassing said retort to an elevated vacuum;

providing a temperature condition in the retort such that magnesium chloride and magnesium metal vapors ascend from said inner vessel placed in the lower retort portion and deposit in said further inner vessel located in the upper retort portion;

removing said further inner vessel from the upper retort portion with the further top cover secured thereto:

providing a grid plate detachably secured at the bottom of the removed further inner vessel;

joining the removed further inner vessel with the outer vessel of said conversion assembly to set up a further conversion assembly;

replenishing fused magnesium to a level above the grid plate in said further conversion assembly;

resuming said feeding of raw refractory metal chloride to effect further conversion in said further conversion assembly;

removing the inner vessel from the lower portion of the purification retort; and

recovering refractory metal product from the removed inner vessel.

4,584,019

WEAR RESISTANT COATING ALLOY

Marinus C. Kesting, Spijkenisse, Netherlands, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 499,758, May 16, 1983, Pat. No. 4,521,663. This application Nov. 30, 1984, Ser. No. 677,057

Claims priority, application PCT Int'l Appl., Oct. 28, 1982, PCT/CH82/00114

Int. Cl.[4] C22C *38/36, 38/24*

U.S. Cl. 75—126 A **2 Claims**

1. Highly alloyed ferrous filler metal for wear resistant coatings on base materials made of ferrous alloys in which the said filler metal has the following composition:

5.0–6.5% C,
12.0–13.0% Cr,
1.5–2.0% Mn,
3.5–4.5% Si,
7.0–8.0% Mo,
7.0–8.0% Nb,
1.5–2.0% W,
1.0–1.5% V,
61.0–55.0% Fe.

4,584,020

WEAR PART WITH HIGH WEAR STRENGTH

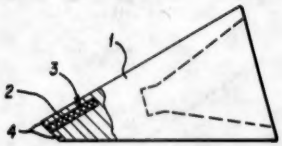
Mats G. Waldenström, Sundbyberg, Sweden, assignor to Santrade Limited, Lucerne, Switzerland

Filed Dec. 5, 1983, Ser. No. 557,936

Claims priority, application Sweden, Dec. 6, 1982, 8206950

Int. Cl.[4] C22C *29/02*

U.S. Cl. 75—236 **14 Claims**



1. Wear part with high wear strength combined with high mechanical strength and toughness, comprising a base portion comprising an iron-base alloy, a wear-resistant portion comprising cemented carbide particulates embedded in said iron-base alloy and an intermediate portion being at least 0.3 mm thick between at least a part of the wear-resistant portion and the base portion of a metal or metal alloy having a toughness greater than that of the iron-base alloy of the base portion.

4,584,021

AEROSOL CORROSION INHIBITORS

Philip L. Bartlett, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 7, 1984, Ser. No. 679,549

Int. Cl.[4] C04B *9/02*

U.S. Cl. 106—14.42 **24 Claims**

1. A corrosion inhibiting composition comprising 15 wt. % to 85 wt. % of nitroalkane containing 1–3 carbon atoms and 85 wt % to 15 wt % by weight of an amine neutralized phosphate ester selected from the group consisting of 2-ethylhexylamine salt of mixed mono- and di-isooctyl acid phosphate, tertiary C_{12} alkyl primary amine salt of mixed mono- and di-isooctyl acid phosphate, diethylamine salt of mixed mono- and di-butoxyethyl acid phosphate and 2-ethylhexylamine salt of mixed mono- and di-tridecyl acid phosphate.

4,584,022

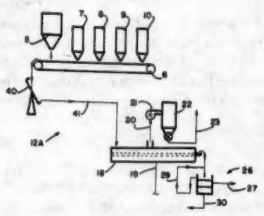
CEMENT PLANT DUST RECOVERY SYSTEM

Sidney M. Cohen, Allentown, Pa., assignor to Fuller Company, Bethlehem, Pa.

Filed Aug. 27, 1984, Ser. No. 644,745

Int. Cl.[4] C04B *7/36*

U.S. Cl. 106—100 **8 Claims**



1. A process of treating dust catch from a cement manufacturing operation to produce cement clinker and enriched alkali and sulfur compounds comprising the steps of:

adding water and carbon in the range of 3% to 9% by weight to the dust catch and adding material to chemically adjust the dust catch to produce a cement clinker

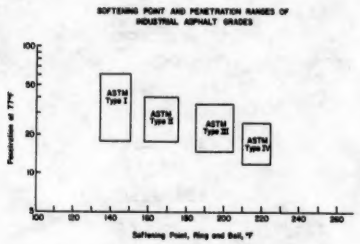
having the desired chemical analysis to thereby produce a mixture;
forming the mixture into nodules;
drying the nodules;
sizing the nodules to obtain a feed material having a selected size range between approximately 4 mesh and 14 mesh;
supplying the feed material to a vessel;
passing air upwardly through the material at a rate of 6 to 10 feet per second to maintain the material as a fluidized bed within the vessel;
supplying fuel to the vessel for combustion in the fluidized bed whereby the bed is maintained at temperatures in the range of approximately 2300° to 2380° F. to produce a cement clinker and enriched alkali and sulfur compounds are volatilized;
discharging cement clinker from the vessel;
discharging combustion gas and enriched volatilized alkali and sulfur compounds from the vessel;
maintaining discharged combustion gases at approximately one percent oxygen; and
precipitating the enriched alkali and sulfur compounds by adding air to the discharged combustion gas.

4,584,023

METHOD FOR PRODUCING INDUSTRIAL ASPHALTS WITHOUT AIR-BLOWING USING PHYTIC ACID

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 31, 1984, Ser. No. 672,426
Int. Cl.⁴ C08L *95/00*
U.S. Cl. 106—273 R **11 Claims**



1. A one-step method of producing an industrial asphalt from a bituminous material which comprises mixing together without air-blowing:
(a) a feed material comprising a bituminous material having a viscosity of at least 50 centistokes at 350 degrees Fahrenheit and wherein the feed material forms a single phase when mixed with 5 weight percent phytic acid; and
(b) from about 0.1 to 20.0 percent by weight of phytic acid, said mixing being done at a temperature in the range of 351 to 600 degrees Fahrenheit, whereby the softening point of the feed is substantially increased and the penetration is significantly decreased.

4,584,024

PROCESS FOR PRODUCING PREGELATINIZED POTATO STARCH FOR USE AS A BINDER IN FEEDS FOR FISH

Yoji Hisada, Richland, Wash.; Koichi Sasamoto; Masao Ichinose, both of Takasago; Osamu Utaka, Kakogawa, all of Japan, and Seiya Nakayama, Richland, Wash., assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 30, 1983, Ser. No. 556,477
Int. Cl.⁴ A23K *1/14, 1/18*
U.S. Cl. 127—66 **10 Claims**

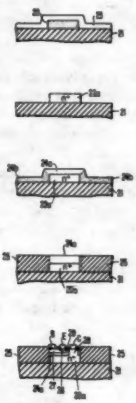
1. A process for producing alpha-potato starch for use as a binder in feed for fish, which comprises carrying out the following steps in order:
(a) measuring electrical conductivity of a potato starch slurry having an initial conductivity greater than or equal to 10μ/cm;
(b) adjusting the electrical conductivity of the potato starch slurry to a valve between 10 and 300μ/cm; and
(c) thermally gelatinizing and dehydrating the potato starch slurry.

4,584,025

PROCESS FOR FABRICATING A SEMICONDUCTOR ON INSULATOR SEMICONDUCTOR DEVICE

Matsuo Takaoka, Koganei; Nobuo Sasaki, Kawasaki; Seiichiro Kawamura, Tokyo, and Osamu Hataishi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 26, 1984, Ser. No. 674,831
Claims priority, application Japan, Nov. 30, 1983, 58-225653
Int. Cl.⁴ H01L *21/388*
U.S. Cl. 148—1.5 **22 Claims**



1. A process for fabricating a silicon on insulator (SOI) type semiconductor device, comprising the steps of:
(a) growing a polysilicon layer on an insulating layer;
(b) growing a cap layer on the polysilicon layer, the cap layer containing an impurity of a first conductivity type; and
(c) recrystallizing the polysilicon layer to form a single crystal silicon layer and doping the single crystal silicon layer with the impurity contained in the cap layer by irradiating an energy beam through the cap layer.

4,584,026

ION-IMPLANTATION OF PHOSPHORUS, ARSENIC OR BORON BY PRE-AMORPHIZING WITH FLUORINE IONS

Chung P. Wu, Mercer, N.J., and George L. Schnable, Lansdale, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 25, 1984, Ser. No. 634,397
Int. Cl.⁴ H01L *21/265*
U.S. Cl. 148—1.5 **10 Claims**

1. A process of forming a low-dose ion implantation of one or more impurity ions selected from phosphorus, arsenic and boron comprising the sequential steps of: implanting the substrate with a dosage of at least about 10^{15} ions per square centimeter of fluorine ions: implanting with said impurity ion at a dosage of about 10^{14} ions per square centimeter or less; and annealing in an inert ambient at a temperature of below about

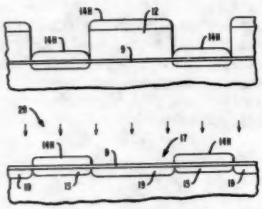
800° C., wherein said fluorine ion implant is not substantially deeper than said impurity ion implant.

4,584,027

TWIN WELL SINGLE MASK CMOS PROCESS

Werner A. Metz, Jr., and Hubert O. Hayworth, both of Fort Collins, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 7, 1984, Ser. No. 669,275
Int. Cl.[4] H01L 7/54, 21/265
U.S. Cl. 148—1.5 13 Claims



1. A process for forming a self-aligned twin-well structure comprising: providing a substrate layer of predetermined conductivity type; forming a first mask structure on the substrate which is the complement of a first well region; depositing selected impurities in the first region in the presence of the mask structure; depositing a relatively conformal dielectric layer on the resulting structure including the mask, a stressed dielectric layer over the mask sidewall, and first well region using a deposition temperature which is below the flow point of the existing first mask structure; selectively removing the stressed dielectric layer on the mask sidewall; removing the existing first mask structure and the overlying regions of the dielectric layer to form the dielectric layer into a second mask which defines a second well region self-aligned with and the complement of the first well; and depositing impurities in the second well in the presence of the second mask, using impurities of the opposite conductivity type to the first well.

4,584,028

NEUTRALIZATION OF ACCEPTOR LEVELS IN SILICON BY ATOMIC HYDROGEN

Jacques I. Pankove, Princeton, N.J., and David E. Carlson, Yardley, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 24, 1984, Ser. No. 653,559
Int. Cl.[4] H09L 21/265
U.S. Cl. 148—1.5 10 Claims

1. A method of modifying the electrical properties of a crystalline silicon semiconductor structure containing a p-type impurity wherein the impurity is substitutional and at least at the surface of the structure, the method comprising exposing the surface of the structure to atomic hydrogen at a temperature of from about 70° to 170° C. for a time sufficient to at least partially neutralize said impurity.

4,584,029

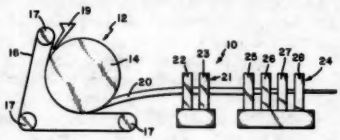
METHOD OF HOT-FORMING METALS PRONE TO CRACK DURING ROLLING

E. Henry Chia, and Ronald D. Adams, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 241,788, Mar. 9, 1981, which is a continuation-in-part of Ser. No. 80,368, Oct. 1, 1979, Pat. No. 4,352,697. This application Apr. 9, 1984, Ser. No. 597,856
Int. Cl.[4] B22D 11/06, 11/12
U.S. Cl. 148—2 13 Claims

1. In a method of continuously casting molten steel, solidifying said molten steel into a cast steel bar and hot forming said cast steel bar in substantially its as-cast condition at a hot-forming temperature by a plurality of substantial compressions, the improvement comprising the steps of:

following casting and solidifying of said steel and prior to said substantial compression of said cast steel bar forming



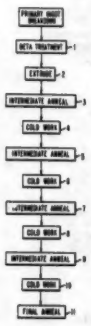
a substantially completely encircling shell of substantially uniform fine grained or equiaxed structure at least at the surface of said cast steel bar by at least one preliminary light compression of said steel, said light compression being directed transversely of said cast steel bar.

4,584,030

ZIRCONIUM ALLOY PRODUCTS AND FABRICATION PROCESSES

Samuel G. McDonald, Monroeville, and George P. Sabol, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 343,787, Jan. 29, 1982, abandoned. This application Jan. 13, 1984, Ser. No. 571,122
Int. Cl.[4] C22F 1/18; G21C 3/06
U.S. Cl. 148—11.5 F 26 Claims



1. An article of Zircaloy alloy material having a region of microstructure adjacent a major surface of the article, said region of microstructure comprising: a substantially random distribution of precipitates, wherein said precipitates have an average size below approximately 1100 angstroms and said major surface characterized by excellent aqueous corrosion resistance as evidenced by a uniform, continuous and adherent oxide film after five days exposure to 454° C., 10.3 MPa steam.

4,584,031

USING A CORROSION PROOF AUSTENITIC ALLOY FOR HIGH LOAD WELDABLE COMPONENTS

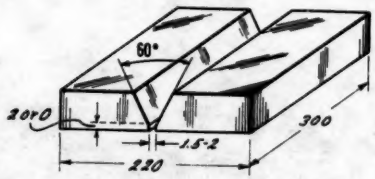
Günter Grützner, Krefeld, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,205
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3407305
Int. Cl.[4] C21D 6/02, 7/02; C22C 38/48
U.S. Cl. 148—12 E 4 Claims

1. Method of making and using weldments of a corrosion proof austenitic alloy comprising the step of providing an alloy

having the following composition not more than 0.08% carbon, from 0.065 to 0.35% nitrogen; of not more than 0.75% niobium but not more than the 4-fold amount of nitrogen used in the alloy, from 16.0 to 22.5% chromium, from 7.0 to 55.0% nickel, not more than 4.75% manganese, not more than 6.5% molybdenum, not more than 3.0% silicon, not more than 4% copper, not more than 0.008 boron, the remainder being iron and unavoidable impurities; and

cold working and recrystallization annealing of said alloy to



attain an ultrafine grained structure with an average linear intercept length of grains below 10 micrometers and therefore obtaining increased 0.2% offset yield strength at room and elevated temperatures; and joining of said alloy in its grain-refined state through welding using a high strength, nitrogen containing, corrosion resistant steel or nickel alloy as filler metal and the ultrafine grained alloy as parent metal, which will in spite of its very small grains not fracture in the seam transition region of the weldments.

4,584,032

BOLTING BAR MATERIAL AND A METHOD OF PRODUCING THE SAME

Kenji Isokawa; Kunio Namiki, both of Nagoya, and Kenji Takahashi, Chita, all of Japan, assignors to Daido Steel Company Limited, Nagoya, Japan

Filed Dec. 8, 1983, Ser. No. 559,535
Claims priority, application Japan, Dec. 10, 1982, 57-215548
Int. Cl.[4] C21D *7/14*
U.S. Cl. 148—12 B **2 Claims**

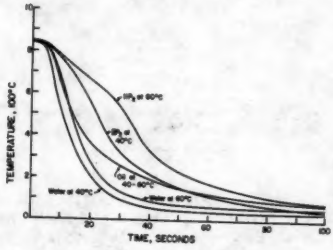
1. A method of producing a bolting bar material, characterized in that a steel material consisting of 0.05～0.2% by weight of carbon, 0.05～0.8% by weight of silicon, 0.8～2% by weight of manganese, not more than 0.035% by weight of phosphorus, not more than 0.030% by weight of sulfur, 0.005～0.05% by weight of niobium, 0.01～0.05% by weight of aluminum, 0.005～0.025% by weight of nitrogen, 0.05～0.25% by weight of vanadium and the balance of iron is heated to 1000°～1100° C. and then rolled at a finish rolling temperature of 750°～950° C. and cooled at an average cooling rate of 5°～50° C./sec during the product-rolling.

4,584,033

METHOD OF QUENCHING

Ronald H. Harding, Westport, Conn., and Paul L. Matlock, Ossining, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1985, Ser. No. 749,782
Int. Cl.[4] B23K *35/24*; C21D *1/56*
U.S. Cl. 148—14 **21 Claims**



1. A method of quenching which comprises the steps of (a) immersing a metal heated to an elevated temperature in a quenchant composition comprising an aqueous solution of a sufficiently hydrophilic water-soluble or water-dispersible organic polymer of the formula:

$$Y[AR]_x$$

to provide a solution containing 15.0 weight percent of polymer and a balance of water with a Drag Out Value of less than about 40 under Standard Conditions; wherein

Y is the residue of an active hydrogen-containing organic compound following active hydrogen removal;

A is a random or block polyoxyalkylene residue having units derived from ethylene oxide and at least one other lower alkylene oxide having 3 or 4 carbon atoms;

R is hydrogen or a hydrolytically stable organic moiety; and

x is an integer having a value of at least 1; wherein for values of x greater than 1 each AR segment of the polymer is the same or different; with the proviso that R is only hydrogen or an organic moiety less hydrophobic than propane either when x is 1 and Y is at least as hydrophobic as hexane or when x is greater than 1 and at least one other R, individually or in combination is sufficiently hydrophobic to depress the cloud point of a 10% by weight aqueous solution of the corresponding $Y[AR]_x$, wherein R is hydrogen, by about 10° F.; and (b) removing the metal from the quenchant when a desired low temperature is reached.

4,584,034

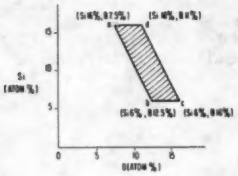
IRON-BASE AMORPHOUS ALLOYS HAVING IMPROVED FATIGUE AND TOUGHNESS CHARACTERISTICS

Michiaki Hagiwara; Akira Menju; Kouhachi Nomura, and Akio Nakamura, all of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Nov. 15, 1984, Ser. No. 671,840
Claims priority, application Japan, Nov. 15, 1983, 58-215533
Int. Cl.[4] C22B *38/02*
U.S. Cl. 148—31 **21 Claims**

1. An iron-base amorphous alloy having improved fatigue and toughness characteristics consisting essentially of from 7.5

to 16 atom % Si, from 7.5 to 16 atom % B, and from 2 to 9 atom % Cr, provided that the composition ranges of Si, B, and Cr



are within the quadrangles defined by a-b-c-d of FIG. 1, and e_2-f_2-g_2-h_2 of FIG. 2, and the balance being substantially Fe.

4,584,035

STEEL SHEET, AND A PRODUCTION PROCESS THEREFOR, FOR USE IN THE MANUFACTURE OF AN END FOR AN EASY-TO-OPEN CAN: AND AN END FOR AN EASY-TO-OPEN CAN

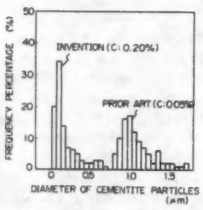
Nobuichi Arai, and Hidejiro Asano, both of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 15, 1984, Ser. No. 590,049

Claims priority, application Japan, Mar. 22, 1983, 58-45966

Int. Cl.[4] C21D *9/46;* C22C *38/00*

U.S. Cl. 148—36 **7 Claims**



1. A steel sheet for use in the manufacture of an end for an easy-to-open can having an improved easy-to-open property, said steel sheet consisting essentially of from 0.14% to 0.25% of C, and the balance being essentially Fe and unavoidable impurities, and the cementite particles formed in said steel sheet having an average diameter of from 0.05 μm to 0.5 μm.

4,584,036

HOT WORKING OF AMORPHOUS ALLOYS

Alan I. Taub, Schenectady, and Peter G. Frischmann, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1984, Ser. No. 657,329

Int. Cl.[4] H01F *1/00*

U.S. Cl. 148—120 **9 Claims**

1. A method of forming an amorphous alloy without destroying its magnetic properties which comprises

providing an amorphous alloy specimen,

ramping the temperature of the specimen at a rate which preserves its viscosity at a low value,

heating the specimen to above its softening temperature,

continuing to ramp the temperature above the softening temperature but below the crystallization temperature as the specimen is stressed, and

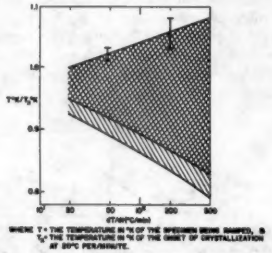
stressing the specimen at or below its yield strength to strain the specimen while the temperature is being ramped.

2. A method of forming an amorphous alloy without destroying its magnetic properties which comprises

providing an amorphous alloy specimen,

ramping the temperature of the specimen at a rate dT/dt which can bring the temperature ratio $T°K./T_x°K.$, to within the hatched area of the graph of FIG. 2,

continuing to ramp the temperature while the coordinates of



the ramping rate and temperature ratio are within the hatched area of FIG. 2, and

stressing the specimen at or below its yield strength to strain the specimen while the temperature is being ramped.

4,584,037

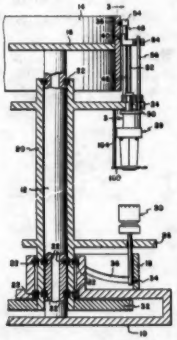
INERTIAL SPIN WELDING OF THERMOPLASTIC AND THERMOPLASTIC COATED CONTAINER PARTS

Vincent E. Fortuna, Huntington Beach, Calif., and Donald N. MacLaughlin, Midland, Mich., assignors to Cosden Technology, Inc., Dallas, Tex.

Division of Ser. No. 415,126, Sep. 7, 1982, Pat. No. 4,386,999, which is a continuation-in-part of Ser. No. 234,344, Feb. 13, 1981, abandoned. This application Feb. 9, 1983, Ser. No. 465,142

Int. Cl.[4] B23K *27/00;* B29C *27/08;* B29D *23/03;* B28C *1/08*

U.S. Cl. 156—69 **3 Claims**



1. A method of inertial spinwelding of a thermoplastic container bottom having an axially extending peripheral surface receivable with a press fit within one end of an open-ended cylindrical container body, said method comprising:

releasably mounting a thermoplastic container bottom having an axially projecting peripheral flange member adapted for tight-fitting engagement in a cylindrical body member, and an open-ended cylindrical paperboard container body, on axially aligned, opposed mandrels, at least one of which is rotatable mandrel;

temporarily engaging said rotatable mandrel with a rotary drive to bring it up to a predetermined rotational speed;

disengaging said rotary drive and allowing said rotating mandrel to continue rotating; and,

moving the two mandrels axially toward each other while said mandrel is rotating, and seating said bottom in one

end of said body, thereby spinwelding said bottom into said body;

wherein the mounting of said body on its mandrel further comprises the steps of radially contracting expandable and contractable body engaging means on said mandrel, locating the body over said body engaging means, and radially expanding the inserted body engaging means to conform the interior surface of said body to a cylindrical surface of a predetermined desirable diameter.

4,584,038

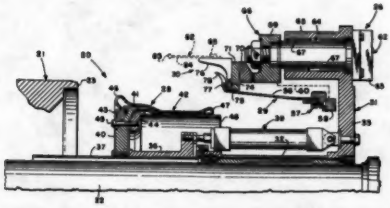
TIRE BUILDING METHOD

George E. Enders, Salem, Ohio, assignor to NRM Corporation, Columbiana, Ohio

Filed Jan. 13, 1984, Ser. No. 570,650

Int. Cl.⁴ B29D *30/32, 30/24*

U.S. Cl. 156—132 **11 Claims**



1. A method of building a tire ply band including the steps of forming an annular band of ply material on a tire building drum with at least one edge thereof extending axially beyond an end of the drum, placing a tire bead at the end of the drum with ply material interposed between the bead and the drum, charcterized by:

axially positioning an annular array of ply-down fingers radially outwardly of the ply edge and then radially inwardly actuating the ply-down fingers to turn the ply edge down over the end of the drum prior to bead placement;

inflating an annular bladder radially underlying the ply edge adjacent the drum end to wrap progressively and turn upwardly the ply edge around the tire bead; and

then axially inwardly pushing a portion of the bladder by a rigid axially inwardly advancing bladder control ring to force the bladder to wrap around the bead and roll over the drum thereby to continue progressive wrapping of the ply edge around the bead and then over the drum; and further characterized by

the control ring being incorporated in an axially movable ring mechanism, and the steps of axially advancing the ring mechanism toward the drum first to actuate the ply-down fingers and then to set the tire bead carried thereby against the turned down ply edge at the end of the drum, then axially retracting the ring mechanism to clear the bladder prior to inflation, and then axially advancing the ring mechanism toward the drum to effect the aforesaid axially inward pushing of the bladder by the control ring.

4,584,039

FINE LINE FLEXIBLE CABLE FABRICATION PROCESS

Paul Y. Shea, Irvine, Calif., assignor to Hughes Aircraft Co., Los Angeles, Calif.

Filed Dec. 26, 1984, Ser. No. 686,364

Int. Cl.⁴ B32B *31/00;* **C25D** *5/02;* **C23F** *1/02*

U.S. Cl. 156—150 **16 Claims**

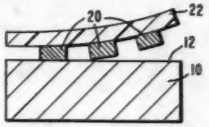
1. A method for fabricating fine line electrical conductors on a support comprising the steps of:

utilizing a surface as a fabrication aid;

selecting one of the surface and the support from a rigid material and the other from a material which is relatively flexible with respect to the rigid material;

forming a pattern, which defines a configuration of the conductors, on the surface;

placing electrically conductive material on the surface in a configuration defined by the pattern configuration to form the electrical conductors;



removing only the pattern from the surface and thus leaving the configured electrical conductors thereon;

adhering the support to the electrical conductors with an adherence greater than that which is between the conductors and the surface; and

separating the asembled conductors and support from the surface by peeling the flexible one of the surface and of the assembled conductors and support from the other thereof.

4,584,040

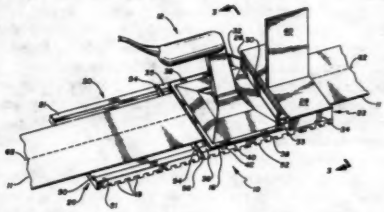
CARPET SEAMING APPARATUS

Martin L. Anderson, Minneapolis, Minn., assignor to Partnership of Lloyd E. Anderson, Betty P. Anderson and Martin L. Anderson, Minneapolis, Minn.

Filed Jan. 30, 1984, Ser. No. 574,980

Int. Cl.⁴ B29C *65/18, 65/50*

U.S. Cl. 156—152 **22 Claims**



1. In a method for bonding seams of abutting carpet edges including laying a reinforced hot melt adhesive tape below the edges to be sealed, applying heat to said adhesive tape below the edges to be sealed with a heated carpet seam iron and applying pressure to said carpet edges onto said hot melted adhesive tape such that said edges are bonded together, the improvement comprising:

laying said reinforced hot melt adhesive tape on top of a heat reflective, non-stick surfaced tool and through a guide including an upstanding member extending between said carpet edges, securing said iron to said guide and sliding said tool and iron along said tape and removing said tool and iron at the end of said sealed edges.

2. A carpet seam bonding apparatus comprising:

(a) a flexible, elongated backing of non-stick material having a low coefficient of heat transfer;

(b) guiding means for positioning a reinforced adhesive tape strip on top of said elongated strip and visually defining the position of said tape strip when edges of a carpet are abutted over said tape and said elongated strip; and

(c) heating means in operative connection to said guiding means such that heat may be applied to the reinforced adhesive tape beneath said heating means, said heating means including a handle which pulls said heating means

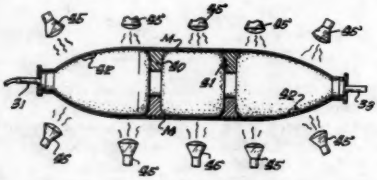
and carpet seam bonding apparatus along abutted carpet edges.

4,584,041

METHOD OF MAKING A CONTAINMENT VESSEL

Richard R. Lyman, Bountiful, Utah, and Robert W. Taylor, Westminster, Calif., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Apr. 21, 1983, Ser. No. 487,225
Int. Cl.[4] B65H *81/00*; B29D *9/04*
U.S. Cl. 156—156 6 Claims



1. A method of forming a containment vessel having an outer shell having a preselected internal volume and a preselected internal reinforcing structural element(s) and any nonreinforcing element(s) extending into the internal volume from the outer shell and a seamless, lightweight inner plastic liner covering the inner surfaces of the outer shell and any element or elements extending therefrom, including the steps of providing a seamless, pressure formable plastic tubular element having a preselected wall thickness and length, selectively expanding the tubular element at the area or areas of the tubular element corresponding to the location of said internal reinforcing structural element(s) and any nonreinforcing element(s) to a preselected diameter relative to its final diameter, forming the thus expanded tubular element in a mold having the final configuration for the plastic liner along with said reinforcing structural element(s) and any necessary nonreinforcing element(s) and pressurized to cause the tubular element to be formed into the configuration of the mold with a cavity formed to accommodate said reinforcing structural and any nonreinforcing element(s) to be mounted therein, setting the thus formed plastic liner to its final configuration while removing any "memory" inherent in the plastic element, adhesively bonding said reinforcing structural element and any nonreinforcing element(s) to the thus formed cavity or cavities, accommodating same in the plastic liner to cause the liner to be completely bonded to said reinforcing structural element(s) and any non-reinforcing element(s). throughout their extent, adhesively wrapping and bonding a preselected structural material around the thus formed plastic liner and said elements bonded thereto, and utilizing the thus formed plastic liner as a mandrel, forming an outer shell around the liner while bonding the two together to provide the containment vessel.

4,584,042

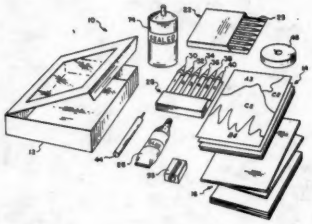
ARTISTIC METHOD AND KIT FOR CREATING AN ART FORM

Walter J. Wandrolk, 8549 Ferald, Morton Grove, Ill. 60053

Filed Nov. 8, 1984, Ser. No. 669,613
Int. Cl.[4] B05D *5/06*; B65D *69/00*
U.S. Cl. 156—280 47 Claims

1. An artistic method for creating an art form, said method including the steps of: permanently affixing a first substrate material to a second substrate material, said second substrate material being rigid relative to said first substrate material; heating with a flame a heat-activated transitional material to soften same; applying said softened transitional material to an upper surface of said first substrate material and allowing said softened transitional material to solidify, said transistional material having a predetermined color and being applied to said upper surface of said first substrate material with varying amounts of pressure, so that said softened transitional material adheres to said upper surface of said first substrate material and solidifies thereon to a desired thickness and texture, thereby creating an art form having a three-dimensional appearance.

22. An art and craft kit for creating an art form having a three-dimensional appearance, said kit comprising: a first substrate material, said first substrate material having an upper surface and a lower surface, said upper surface including instructive means for creating an art form on said upper surface of said first substrate material; a second substrate material, said second substrate material having dimensions approximately equal to said first substrate material and being rigid relative to said first substrate material; said first substrate material being



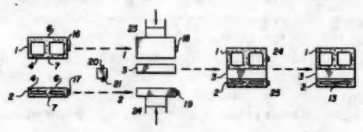
adapted to be affixed or being affixed to said second substrate material; solid heat-activated transitional material for creating an art form having a three-dimensional texture on said upper surface of said first substrate material; said transitional material being capable of being softened for creating said art form and being adapted to adhere to said upper surface of said first substrate material; and a candle which can be lighted to create a flame for heating said transitional material for softening same to create said art form on said upper surface of said first substrate material, said transitional material being capable of being heated with a flame of said candle to a temperature sufficient to soften said transitional material so that said transitional material can be transferred to said upper surface of said first substrate material and then solidified thereon to create the art form.

4,584,043

INSULATED CONCRETE BLOCK ASSEMBLY AND METHOD OF MAKING THE SAME

Monte Riefler, P.O. Box 210, Hamburg, N.Y. 14075

Filed Aug. 15, 1983, Ser. No. 523,288
Int. Cl.[4] E04G *21/00*
U.S. Cl. 156—297 4 Claims



1. A method of making an insulated concrete block assembly which can be laid as a unit dry or with mortar joints between adjacent assembles, said assembly consisting essentially of:

an inner concrete block having upper and lower load bearing surfaces and inner and outer faces extending between said upper and lower surfaces and a central crossweb extending between said upper and lower surfaces and having ends integral with said inner and outer faces,

an outer concrete block spaced from and registering with said inner block and having upper and lower load bearing surfaces and inner and outer faces extending between said

upper and lower surfaces and a central crossweb extending between said upper and lower surfaces and having ends integral with said inner and outer faces,

a board of insulating material sandwiched between and adhesively bonded to the outer face of said inner block and to the inner face of said outer block, said board having an upper edge registering with the upper surfaces of said blocks,

a sheet metal tie having opposite ends respectively lying flat on and bridging said upper edge of said insulating material and adhesively bonded to the upper surfaces of the crosswebs of said inner and outer blocks, the adhesive bonds to the blocks being of greater strength than the concrete;

said method consists of conveying said inner and outer blocks along laterally separted paths to stops, positioning a set of one inner and one outer block with the outer face of the inner block presented to and in register with, but laterally spaced from the inner face of the outer block, conveying said set of blocks past two sets of adhesive guns, one set facing and applying adhesive to said outer face of the inner block and the other set facing and applying adhesive to said inner face of the outer block, stopping said inner and outer blocks in register with and laterally spaced from each other with said adhesive coated faces facing each other, inserting a board of insulating material between and registering with said adhesive coated faces, pressing the blocks together to compress the board between the adhesive coated faces of said blocks, applying a spot of adhesive to the upper surface of the crossweb of each block, and pressing the ends of the sheet metal tie against said spots to adhesively bond the tie to said blocks.

4,584,044

METHOD OF HEATING AND REMOVING FUSIBLE ROAD MARKINGS FROM A ROAD SURFACE

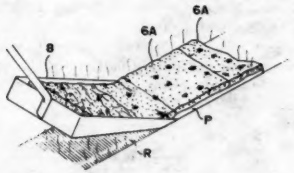
Yasuyuki Tokunaga, Urawa, and Shozo Fukushima, Tokyo, both of Japan, assignors to Marusho Kagaku K.K.K. and Nihon Sanka Kogo K.K.K., both of Tokyo, Japan

Continuation of Ser. No. 100,929, Dec. 6, 1979, abandoned. This application Feb. 11, 1982, Ser. No. 347,971

Claims priority, application Japan, Dec. 28, 1978, 53-163674; Dec. 28, 1978, 53-163675

Int. Cl.[4] B32B *31/26, 35/00*

U.S. Cl. 156—344 **5 Claims**



1. A method for removing an elongated heat-fusible road marking from a road surface comprising:

obtaining a solid fusing agent in the shape of a sheet having a width essentially the same as the width of the road marking to be removed, and composed of a particulate carbonaceous fuel, an oxidation exothermic agent, an igniting agent, and a binder, well mixed together;

laying the sheet on the surface of the road marking to be removed from the raod surface and aligning the sides of the sheet with the sides of the road marking;

igniting said igniting agent of the sheet to ignite said oxidation exothermic agent to in turn ignite said carbonaceous fuel to produce red hot embers distributed on the surface of the road marking;

permitting said embers to burn on the road marking surface for a time sufficient to conduct high temperature heat to the road marking to fuse the marking, and to cause at least some of the embers to adhere to the road markings; and

before the embers extinguish and while the road marking is fused, simultaneously removing the road marking and the embers thereon from the road surface.

4,584,045

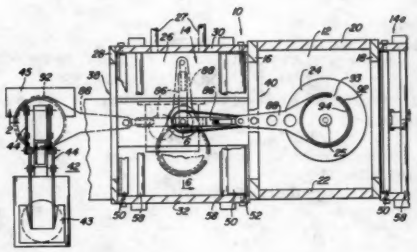
APPARATUS FOR CONVEYING A SEMICONDUCTOR WAFER

Edmond A. Richards, Marlton, N.J., assignor to Plasma-Therm, Inc., Kresson, N.J.

Filed Feb. 21, 1984, Ser. No. 581,856

Int. Cl.[4] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—345 **15 Claims**



1. A transfer apparatus for conveying a semiconductor wafer between a first location at a first pressure and a second location at a second pressure without substantially affecting the pressure at either location comprising:

a substantially airtight transfer chamber disposed between the first and second locations, the transfer chamber including a first closeable port for providing communication between the first location and the transfer chamber, a second closeable port for providing communication between the second location and the transfer chamber and port actuator means for opening and closing the first and second ports, the transfer chamber further including means for the treatment of the semiconductor wafer;

transfer means for transferring the wafer between locations including first and second elongated arm members each having first and second ends, the first end of the first arm member being pivotally supported with the transfer chamber and the first end of the second arm member being pivotally supported by the first arm member proximate to the second end of the first arm member, the second end of the second arm member being adapted to receive and support a semiconductor wafer, the first and second arm members being of sufficient length and being cooperative to pivot to at least three positions, the three positions including

a first position in which at least a portion of the second end of the second arm member extends through the first port,

a second position in which at least a portion of the second end of the second arm member extends through the second port and

an intermediate position in which both arm members are located within the transfer chamber,

whereby a semiconductor wafer may be placed upon the second end of the second arm member when the arm members are in one of the first or second positions, may be treated by the treatment means when the arm members are in the intermediate position and may be removed when the arm members are in the other of the first and second positions;

arm member actuator means for pivoting the first and second arm members to the first, second and intermediate positions;

pressure adjusting means for adjusting the pressure within

the transfer chamber to either the first or the second pressure; and

control means for controlling the port actuator means, the arm member actuator means and the pressure adjusting means,

whereby the pressure within the transfer chamber is adjusted only when both ports are closed with the arm members in the intermediate position,

whereby the first port is opened to permit the arm members to pivot to the first position only when the pressure within the transfer chamber has been adjusted to the first pressure, and,

whereby the second port is opened to permit the arm members to pivot to the second position only when the pressure within the transfer chamber has been adjusted to the second pressure.

4,584,046

DEVICE FOR ATTACHING ARTICLES TO PACKAGES, BOTTLES AND OTHER OBJECTS

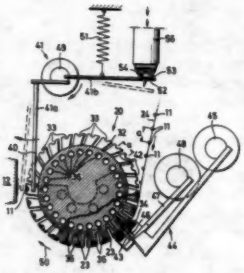
Jurgen Geyssel, Kirchweg 76, 5000 Cologne 40, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,613

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1982, 3204011

Int. Cl.[4] B32B *31/00*; G05G *15/00*; B65C *9/40*

U.S. Cl. 156—358 **11 Claims**



1. Apparatus for applying accessory articles to objects moving past an application station at intervals, comprising:

support means at said application station;

applicator means on said support means and displaceable between retracted and extended positions relative to an object at said application station, said applicator means comprising a pivoted lever having a first arm portion for engaging and thrusting said accessory article across a space and onto said object and a second arm portion;

means for bringing an accessory article into a confronting position with the object at said application station comprising a compartmentalized wheel rotatably mounted on said support means and having compartments arranged around its outer surface for receiving articles and at least one annular groove behind articles in said compartments, said first arm portion of said applicator means being accommodated in said annular groove in said retracted position of said applicator means, whereby said first arm portion in moving from said retracted to said extended position displaces an article out of its respective compartment and thrusts said displaced article across said space and onto said object;

a compressed air nozzle for directing a blast of compressed air directly against said second arm portion of said applicator means to displace said applicator means from said retracted position to said extended position; and

biasing means for urging said applicator means from said extended to said retracted position.

4,584,047

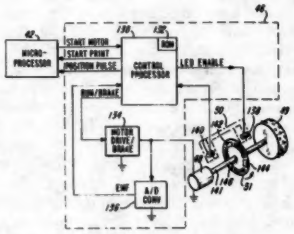
HAND-HELD LABELER HAVING IMPROVED WEB POSITION SENSING AND PRINT HEAD CONTROL

James L. Vanderpool, Kettering, and James M. Bain, Xenia, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Apr. 3, 1984, Ser. No. 596,346

Int. Cl.[4] B65C *9/18*, *11/02*

U.S. Cl. 156—361 **28 Claims**



1. A hand-held labeling machine comprising; a housing having a manually engageable handle, the housing having means for holding a label supply roll of a composite web having labels releaseably adhered to a backing strip, means for printing on a label at a printing position, means for peeling the printed label from the backing strip, label applying means disposed adjacent the peeling means, means for advancing the web to peel a printed label from the backing strip at the peeling means and advance the printed label into label applying relationship with the label applying means and to advance another label into the printing position, means for entering selected data to be printed, the printing means including a thermographic print head having a plurality of individually selectable print elements for printing on a thermographic label at a printing position, means coupled to said data entering means for electrically processing the selected data and energizing the individual print elements in a predetermined sequence determined by the selected data to print data on the label, further including indexing means operable by said advancing means and coupled to said processing means for providing signals representative of the position of a label relative to said printing position, said indexing means including a plurality of home position indices and a plurality of position indices disposed adjacent each home position index, said indices being disposed on a disc as light contrasting indices formed by aperture on said disc, said home position index being larger than said position indices.

4,584,048

LABELER

Paul H. Hamisch, Jr., Franklin, and John D. Mistyurik, Tipp City, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

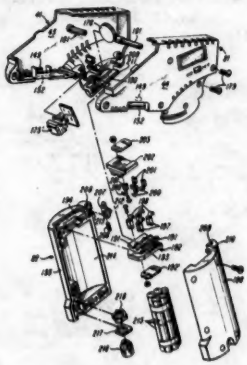
Division of Ser. No. 484,344, Apr. 12, 1983, Pat. No. 4,477,305. This application Sep. 10, 1984, Ser. No. 649,084

Int. Cl.[4] B65C *11/02*

U.S. Cl. 156—384 **6 Claims**

1. A hand-held labeler adapted to print and apply pressure sensitive labels releasably secured to the carrier web, comprising: a housing, a manually engageable handle connected to the housing, means for printing on labels, the printing means including an electrically selectable print head having a plurality of printing elements, means for delaminating printed labels, means for applying printed labels, means for advancing the carrier web, means defining a path for guiding the web from the label roll, to the printing means, to the delaminating means, and to the web advancing means, the handle having means for receiving a source of electrical energy to power the print head,

and means providing a breakaway connection releasably connecting the handle to the housing for enabling separation of the



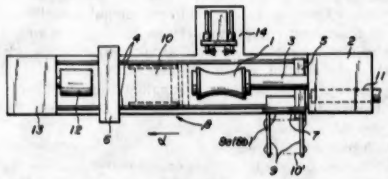
handle and the housing upon application of excessive force to the labeler to minimize the risk of damage to the labeler.

4,584,049

RADIAL TIRE FORMING BLANK SUPPLY APPARATUS

Makito Mukae, Higashimurayama, and Yusuke Araki, Kodaira, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Sep. 12, 1984, Ser. No. 649,774
Claims priority, application Japan, Oct. 5, 1983, 58-185113
Int. Cl.[4] B27H *17/00*
U.S. Cl. 156—396 9 Claims



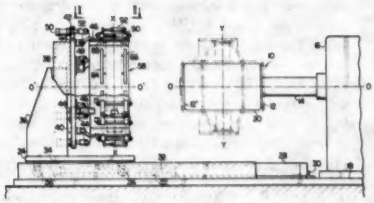
1. A radial tire forming blank supply apparatus for use in a radial tire building machine comprising a forming drum for transforming a green case as a radial tire forming blank into a toroidal shape and joining a tread band onto the toroidal green case, a main carriage reciprocatively moving below said forming drum along guide rails parallel to a rotating axis of said forming drum to fit said green case onto said forming drum, and a sub-carriage for applying said tread band onto an outer circumference of said green case by movement of said sub-carriage toward said forming drum, said radial tire forming blank supply apparatus comprising, a column rotatable about a vertical axis spaced from the rotating axis of the forming drum, a pair of cantilever beams one above the other provided on said column, and two pairs of bar-like clamps, each pair being secured to each said cantilever beam and movable radially toward and away from each other to clamp and release said green case therebetween.

4,584,050

LOOPED-ARTICLE TRANSFER APPARATUS

Yuzo Kumagai, Niiza, and Yuichiro Ogawa, Fuchu, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Mar. 6, 1984, Ser. No. 587,024
Claims priority, application Japan, May 2, 1983, 58-78060
Int. Cl.[4] B29D *30/08*; B66C *23/00*
U.S. Cl. 156—406.2 11 Claims



1. A looped-article transfer apparatus for transferring a looped article to a cylindrical structure having a center axis therethrough and an axially central plane perpendicular to the center axis, comprising

(1) a generally cylindrical collapsible ring structure having a center axis substantially aligned with the center axis of said cylindrical structure and a centering plane substantially parallel with said central plane of said cylindrical structure, the ring structure being radially deformable about the center axis thereof and being axially movable between a first position remote from said cylindrical structure and a second position coaxially to encircle the cylindrical structure;

(2) carrier means supporting said ring structure thereon and operative to move the ring structure between the first and second positions thereof with respect to said cylindrical structure;

(3) a plurality of pairs of centering elements provided radially inside the ring structure, each pair of centering elements being located axially on both sides of said centering plane of the ring structure and consisting of centering elements which are located axially on both sides of said centering plane of the ring structure and which are movable toward and away from the centering plane in parallel with the center axis of the ring structure; and

(4) locating means provided radially outside said ring structure and engaging said centering elements for locating each pair of centering elements at selected distances from said centering plane of the ring structure.

4,584,051

APPARATUS FOR FORMING VISIBLE FILE POCKETS

Alan F. Davies, Vancouver, Canada, assignor to Davies Office Equipment, Ltd., Vancouver, Canada

Division of Ser. No. 461,537, Jan. 27, 1983. This application Feb. 13, 1985, Ser. No. 701,114
Int. Cl.[4] B31F *1/00*
U.S. Cl. 156—463 14 Claims

1. Apparatus for forming generally rectangular visible file pockets having first and second transverse parallel edges and front and back, upper and lower pocket tips respectively defined by first, second, third and fourth turned-over edge portions formed integrally therewith and wherein the front and back lower pocket tips are adjacent the first transverse parallel edge and the front and back upper pocket tips are adjacent the second transverse parallel edge: comprising, in combination:

(a) means for feeding first and second continuous sheets of coated polymeric materials each having a heat-bondable surface film formed thereon successively through a heat laminating station, cooling station, series of edge forming

stations, and a web subdividing station and wherein the heat-bondable surface films on the first and second continuous sheets are disposed in face-to-face relation;

(b) said heat laminating station including:

(i) means for heating the first and second continuous sheets to soften the heat-bondable surface films thereon;

(ii) means for maintaining the longitudinal edges of the first and second sheets in spaced apart relation as the sheets pass through the laminating station; and,

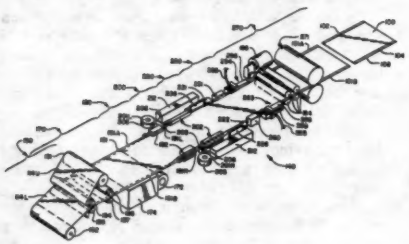
(iii) means for applying a heat-sealing effective pressure over the central surface area of the first and second continuous sheets while maintaining the longitudinal edges thereof in spaced apart relation so as to form a continuous laminated central web having front and back document receiving faces and longitudinally extending unlaminated, unbonded edges;

(c) said cooling station including means for cooling the heated polymeric materials while the longitudinal edges of the first and second sheets are maintained in spaced apart relation;

(d) said series of edge forming stations including:

(i) means for spreading the unlaminated, unbonded, longitudinal edge portions of the first and second continuous sheets;

(ii) means for edge heating and softening the polymeric



material defining the spread unlaminated edge portions for permitting such material to be heat-set in a folded configuration;

(iii) means for folding the spread longitudinally extending edge portions of the first and second sheets in opposite directions along each longitudinal edge through angles on the order of 90° with respect to the laminated central web;

(iv) means for folding the spread and partially folded unlaminated edges through additional angles of on the order of 90° with the folded over edge portions defined by the first and second sheets overlying and underlying the continuous laminated central web and defining front and back pocket tips along each of the longitudinal edges of the web; and,

(v) means for cooling and setting the folded over unlaminated edge portions of the continuous laminated central web in their folded over configuration; and,

(e) means for cutting the continuous laminated central web and its folded over edges to form a plurality of visible file pockets having front and back, continuous, uninterrupted pocket tips integral therewith and coextensive with first and second transverse parallel edges thereof for receiving and captively retaining documents inserted therein on either or both of the front and back faces of the laminated central web.

4,584,052

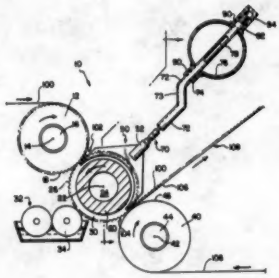
VACUUM SINGLE FACER

Theodore M. Baum, 2 Indian Spring Rd., Byram, N.J. 07821

Filed Jul. 26, 1982, Ser. No. 401,885

Int. Cl.[4] B31F 1/28

U.S. Cl. 156—473 **4 Claims**



1. A single facer machine for forming a corrugated paperboard laminate, the paperboard laminate defined by a corrugated paperboard layer adhesively secured to a flat paperboard layer, the machine including a first corrugating roll, a second corrugating roll, a glue applicator, and a pressure roll, the machine adapted to receive a first paperboard web for passage through the nip of the contiguous first and second corrugated rolls, the first paperboard web being corrugated at the nip of said first and second corrugating rolls, the glue applicator applying adhesive to the outwardly facing valleys of the corrugated first web, the machine further adapted to receive a second paperboard web passing over a part of the circumference of the pressure roll, the second paperboard web being adhered to the adhesively treated valleys of the first web at the nip between the second corrugating roll and the pressure roll to thereby form a two-layer paperboard laminate, means for applying and maintaining a vacuum to the flutes of the second corrugating roll over that part of the circumference of the second corrugating roll which is contacted by the corrugated first web to thereby maintain the corrugated first web in contact with the flutes of the second corrugating roll until the corrugated first web is adhered to the second paperboard web, the improvement comprising, the means for supplying a vacuum to the flutes of the second corrugating web including,

(a) a plurality of axially spaced, circumferential vacuum grooves in the second corrugating roll, the grooves extending radially inwardly of the valleys between the flutes in said second corrugating roll,

(b) a plurality of vacuum fingers, each finger aligned with and fitting into a respective one of said second corrugating roll grooves, each finger extending into its respective groove over an angular extent which is supplementary to the angular extent of the contact of the first paperboard web with the second corrugating roll, each vacuum finger extending into its respective groove to an extent radially inwardly of the valleys of the flutes of the second corrugating roll,

(c) whereby the space between the corrugated first web and the flutes of the second corrugating roll is maintained at below atmospheric pressure, over a region defined by (1) the angular extent of circumferential contact of the first web and the second corrugating roll, and (2) between the axially spaced grooves of the second corrugating roll,

(d) means for supplying a vacuum to each of said vacuum fingers,

(e) a rigid tube connecting the source of vacuum to, respectively, each vacuum finger by a connection therewith at one end of the rigid tube, the rigid tube sealingly passed through, adjacent its other end, a wall of a vacuum supply

duct, that portion of the rigid tube within the vacuum supply duct having an aperture in its walls, the rigid tube being adjustably secured to the vacuum duct so that the rigid tube is adjustably movable along its longitudinal axis, to thereby adjust its associated vacuum finger relative to its associated groove in the second corrugating roll.

4,584,053

PROCESS FOR PREPARING ZNSE SINGLE CRYSTAL

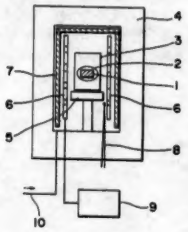
Hirokuni Namba; Hajime Osaka; Koichi Kamon, and Fuminori Higuchi, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 22, 1984, Ser. No. 623,115

Claims priority, application Japan, Jun. 29, 1983, 58-119406

Int. Cl.⁴ C30B *1/12*

U.S. Cl. 156—603 **4 Claims**



1. A process for preparing a large ZnSe single crystal, comprising vacuum sealing polycrystalline ZnSe prepared by a chemical vapor phase deposition in a capsule and hot isostatically pressing the polycrystalline ZnSe in the capsule at a temperature of at least 1,000° C. and a pressure of at least 2,000 atm for at least one hour.

4,584,054

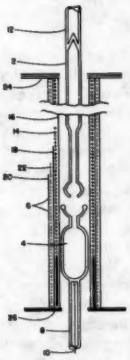
SOLIDS REFINING PROCESS

Lawrence R. Holland, Huntsville, Ala., assignor to Research Corporation, New York, N.Y.

Filed Jul. 13, 1984, Ser. No. 630,503

Int. Cl.⁴ C30B *23/00*

U.S. Cl. 156—609 **13 Claims**



1. A vapor-liquid-solid (VLS) solids refining process which comprises:

(a) establishing and maintaining in a closed VLS system having an evaporation zone and a condensing-solidifying zone an ambient gas pressure which is substantially below the vapor pressure at its melting point of a solid material located in the evaporation zone, said solid material being the material to be purified and having gases dissolved therein,

(b) evaporating the material in the evaporation zone to provide vapors of the material, said material having a vapor pressure in the evaporation zone greater than the vapor pressure of said material at its melting point,

(c) maintaining a temperature in the condensing-solidifying zone effective to condense the vapors of said material to a liquid and to solidify said material at a rate substantially less than the rate of condensation of said material, whereby the liquid material continuously washes the surface of the solid material in the condensing-solidifying zone, and

(d) transporting the unsolidified portion of the liquid material from the condensing-solidifying zone to the evaporation zone.

4,584,055

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Akio Kayanuma, Odawara; Minoru Nakamura, Zama, and Katsuaki Asano, Ebina, all of Japan, assignors to Sony Corporation, Tokyo, Japan

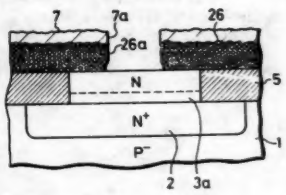
PCT No. PCT/JP84/00367, § 371 Date Mar. 19, 1985, § 102(e) Date Mar. 19, 1985, PCT Pub. No. WO85/00695, PCT Pub. Date Feb. 14, 1985

PCT Filed Jul. 19, 1984, Ser. No. 717,173

Claims priority, application Japan, Jul. 19, 1983, 58-132349

Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—628 **2 Claims**



1. A method for manufacturing a semiconductor device including an etching process for selectively removing a semiconductor layer formed on a substrate, said method comprising the steps of implanting into said semiconductor layer an impurity with etching-resistant property relative to an isotropic etching of said semiconductor layer, anisotropic-etching away a region of said semiconductor layer to be selectively etched away with its portion in its thickness direction being remained, and removing said remained portion in said thickness direction of said semiconductor layer by the isotropic etching.

4,584,056

METHOD OF MANUFACTURING A DEVICE WITH MICRO-SHUTTERS AND APPLICATION OF SUCH A METHOD TO OBTAIN A LIGHT MODULATING DEVICE

André Perret, Les Geneveys-sur-Coffrane, and Raymond Vuilleumier, Fontainemelon, both of Switzerland, assignors to Centre Electronique Horloger S.A., Switzerland

Filed Nov. 13, 1984, Ser. No. 670,929

Claims priority, application Switzerland, Nov. 18, 1983, 199/83

Int. Cl.⁴ B44C *1/22*; C03C *15/00, 25/06*; C23F *1/02*

U.S. Cl. 156—630 **28 Claims**

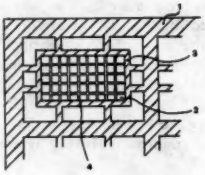
1. A method of manufacturing a micro-shutter device comprising:

producing a first rigid and thin grid presenting at least one cell;

depositing, on said first grid, a layer of organic material blocking up said at least one cell so as to produce a plane support;

producing, on said layer of organic material, a second, rigidifying grid having a thickness substantially less than that of said first grid;

depositing, on said second grid and on any parts of said layer of organic material not covered by said second grid, a fine



metallic layer with a thickness substantially less than that of said second grid;

cutting, in said fine metallic layer, at least one shutter and shutter attachments interconnecting said at least one shutter with said second grid; and

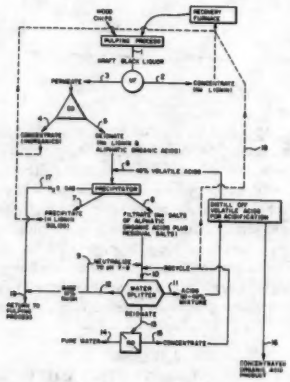
etching said layer of organic material from said at least one cell of said first grid so as to free said at least one shutter to be rotatable about said shutter attachments.

4,584,057

MEMBRANE PROCESSES FOR SEPARATION OF ORGANIC ACIDS FROM KRAFT BLACK LIQUORS

John W. Rowe, Madison, Wis., and Harry P. Gregor, New York, N.Y., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 22, 1985, Ser. No. 725,720
Int. Cl.[4] D21C *21/04*
U.S. Cl. 162—16 **7 Claims**



1. A process for the recovery of a low molecular weight, aliphatic organic acid fraction from a kraft black liquor, which process comprises

(a) subjecting said black liquor to ultrafiltration, thereby separating said black liquor into a concentrate enriched in the high molecular weight fraction and a permeate;

(b) subjecting the permeate produced in step (a) to electrodialysis, thereby separating the permeate into a concentrate containing at least part of the inorganic acid components of the permeate and a deionate containing sodium lignin and aliphatic organic acids;

(c) adding to the deionate produced in step (b) sufficient acid to reduce the pH thereof to about 4 to 5, thereby precipitating lignin solids from the deionate and leaving a solution containing inorganic acids and other materials;

(d) separating the precipitate formed in step (c) from the solution produced therein;

(e) raising the pH of the separated solution produced in step (d) to about 7 to about 8; and

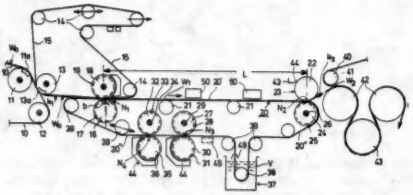
(f) subjecting the solution produced in step (e) to electrodialytic water-splitting, thereby producing a low molecular weight, aliphatic acid organic fraction and an alkaline fraction.

4,584,058

METHOD AND APPARATUS FOR DEWATERING A FIBROUS WEB

Antti Lehtinen, Jyväskylä; Väinö Sailas, Vaajakoski; Markku Lampinen, and Bjarne Ekberg, both of Turku, all of Finland, assignors to Valmet OY, Finland

Filed May 21, 1984, Ser. No. 612,721
Claims priority, application Finland, May 20, 1983, 831807
Int. Cl.[4] D21F *11/00*
U.S. Cl. 162—199 **14 Claims**



3. A method for dewatering a web in a paper machine, comprising the steps of:

providing a lopped processing band adapted to support and carry the web along a substantial portion of its run, the processing band including an outer liquid-saturated, fine porous suction surface which is impermeable to air and a water-containing porous layer in liquid communication with the suction surface;

maintainig the water in the water-containing porous layer within the processing band at an underpressure relative to the pressure of the water in the web;

transferring the web onto the processing band to contact the liquid-saturated air impermeable fine porous suction surface thereof;

carrying the web in contact with the suction surface of the processing band along a substantial portion of its run while the water in the porous layer of the band is being maintained at an underpressure, the water present in the web being thereby brought into hydraulic contact with the water in the porous layer of the processing band through the liquid-saturated air impermeable fine porous suction surface so that water contained in the web passes through the suction surface into porous layer to thereby dewater the web;

after dewatering the web, separating the same from the band and directing the band into a compression zone defined by at least on nip, wherein some water is pressed out from the inner porous layer through the air impermeable liquid-saturated fine porous suction surface to regenerate the band into an absorptive condition and placing the remaining water in the inner water-containing porous layer under an underpressure, and

conducting the band in this state into contact with the web so that dewatering of the web begins.

10. Apparatus for dewatering a web in a paper machine, comprising:

a looped processing band mounted on support rolls to support and carry the web a substantial portion of a run thereof, said processing band including an outer liquid-saturated fine

porous suction surface which is impermeable to air, a water-containing porous layer in liquid communication with said suction surface, and means for maintaining the water in the water-containing porous layer within the processing band at an underpressure relative to the pressure of the water in the web;

means for transferring the web onto the processing band to contact the liquid-saturated air impermeable fine porous suction surface thereof while the water in the porous layer of the band is being maintained at an underpressure so that the water present in the web is in hydraulic contact with the water in the porous layer of the Processing band through the liquid-saturated air impermeable fine porous suction, whereby the water contained in the web passes through the suction into the porous layer to dewater the web; and

means for detaching the web from said processing band after dewatering.

4,584,059

BELT PRESS UNIT, PREFERABLY AS WET PRESS OF A PAPER MACHINE

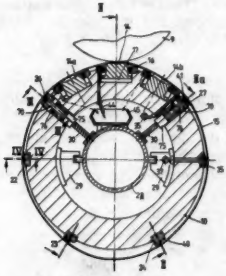
Christian Schiel, Heidenheim; Karl Steiner, Herbrechtingen, and Hans Flümig, Heidenheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 592,629, Mar. 23, 1984, abandoned. This application Jul. 10, 1985, Ser. No. 753,341

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1983, 3311998

Int. Cl.⁴ D21F *3/02, 3/08*

U.S. Cl. 162—361 **20 Claims**



6. A belt press unit for a paper machine, comprising:

a supporting body for a press belt, and a press belt extending around the supporting body; the supporting body having an outwardly urgable press shoe supported thereon, and the press shoe being for pressing the press belt that extends around the supporting body against an opposing surface; the opposing surface being positioned to sustain the pressure of the press shoe; a press zone defined at the press shoe; the supporting body being slightly deflectable under the force of the press shoe against the opposing surface;

the press belt being closed upon for forming itself a tubular shape and thereby defining a closed inner space within the press belt; the press belt being movable along a path of travel; the press belt travelling over the press shoe for being pressed against the opposing surface by the press shoe; the press belt being sized and shaped with respect to the supporting body for defining a distance between the press belt and the supporting body outside the press zone along the path of travel of the press belt around the supporting body;

a substantially flexurally rigid beam extending along the supporting body and being surrounded by the press belt which extends around the beam, the beam being spaced from the supporting body and extending in a direction across the path of travel of the press belt; the beam being supported on the supporting body at two axially spaced apart locations along the beam;

at least one guide ledge supported on and extending longitudinally along the beam for substantially the length thereof and extending across the path of travel of the press belt for being applied against the inside of the press belt as the press belt moves past the guide ledge and structured so that the press belt rides on the guide ledges.

4,584,060

LOW TEMPERATURE CARBONIZATION PROCESS FOR COAL HYDROGENATION RESIDUES

Lothar Winckler, Gladbeck; Klaus Fuhrmann, Dorsten; Ulrich Graeser, Haltern, and Peter Wenning, Dorsten, all of Fed. Rep. of Germany, assignors to Veba Oel Entwicklungs-Gesellschaft mbH, Gelsenkirchen, Fed. Rep. of Germany

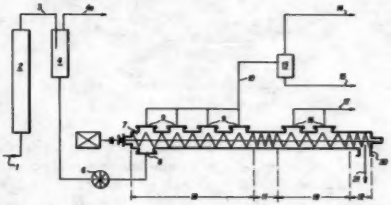
Filed Oct. 15, 1984, Ser. No. 660,970

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337622

The portion of the term of this patent subsequent to Apr. 22, 2003, has been disclaimed.

Int. Cl.⁴ C10B *47/44*

U.S. Cl. 201—32 **13 Claims**



1. A method for low temperature carbonization of coal hydrogenation residues, which comprises:

subjecting a coal hydrogenation residue to reduced pressure distillation in a screw extruder comprising an evaporation zone and a low temperature carbonization zone, which zones are separated from each other by means of a mechanical compression stage, and having a liquid space at its entry, thereby producing gases and vapors and a non-volatilized remaining material;

drawing off said gases and vapors; and

subjecting said non-volatilized material to low temperature carbonization in said screw extruder.

4,584,061

VACUUM DESALINIZATION DEVICE

Robert E. Shelton, 4510 S.W. 34 Dr., Ft. Lauderdale, Fla. 33312

Filed Jan. 2, 1985, Ser. No. 688,317

Int. Cl.⁴ B01D *3/10*

U.S. Cl. 202—185.6 **8 Claims**

1. A desalinization device comprising,

(a) a main tank having a substantially closed configuration and including an upper zone and a lower zone,

(b) a condensate collector bowl supported within said tank and having an open upper end, a wall and a floor, said open upper end communicating with an interior of said tank and being disposed in said upper zone thereof,

(c) a cooling coil disposed within said bowl and formed of tubular material structured to allow cooling water to pass therethrough,

(d) heater means disposed in said lower zone and means to introduce water into said lower zone to be heated and thereby converted into steam,

(e) guide means for guiding steam into interruptive engagement with said cooling coil for condensation thereof,

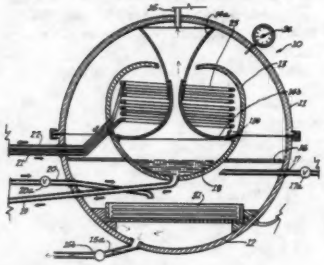
(f) said guide means extending through said cooling coil and

comprising a lower flow guide disposed on the interior of said bowl and protruding outwardly from a lower end of said cooling coil,

(g) said guide means further comprising an upper flow guide extending outwardly from an upper end of said cooling coil and through said open end of said bowl into said upper zone of said tank,

(h) said tank, bowl and guide means cooperatively structured to define a path of fluid flow of steam from said lower zone of said tank to said cooling coil,

(i) said path of fluid flow successively comprising an interior wall surface of said tank, an exterior surface of said bowl wall and an exterior surface of said upper flow guide; and interior surface of said bowl wall and exterior surfaces of both said upper and said lower flow guides,



(j) a condensate passage disposed adjacent to a peripheral edge of said lower flow guide and between said peripheral edge and the interior surface of said bowl wall, said condensate passage structured to allow flow therethrough of condensate to said bowl floor,

(k) means to produce a vacuum for reducing the pressure in the tank thereby reducing the temperature required to convert heated water in the lower zone into steam and to urge steam flow along said path of fluid flow, said tank having an exit port above said open bowl end to communicate steam flow from the bowl in the tank, a first conduit means including valve means to control flow through the device of water being heated and converted into steam and water to flow through said cooling coil, said first conduit means including regulator valves.

4,584,062

APPARATUS FOR THE FRACTIONATION OF A MIXTURE COMPRISING AT LEAST ONE LIQUID VOLATILE FRACTION

Robert Sussmeyer, Brussels; Alain Pluvinage, Irchonwelz, and Christian Moenaert, Brussels, all of Belgium, assignors to Ateliers Sussmeyer SPRL, Brussels, Belgium

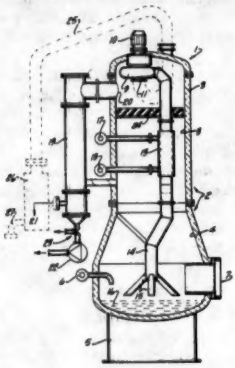
Division of Ser. No. 381,223, May 24, 1982, Pat. No. 4,437,940. This application Sep. 20, 1983, Ser. No. 533,951

Claims priority, application France, Jun. 4, 1981, 81 11054

Int. Cl.[4] B01D *3/10, 1/12*

U.S. Cl. 202—197 **11 Claims**

1. An apparatus for the fractionation of a mixture comprising at least one liquid volatile fraction, which comprises a vaporization chamber, consisting of a cell equipped with a feed device for introducing a mixture to be fractionated, and a device for discharging the residue, the chamber being surmounted by a gas column, a circulation circuit, comprising a fan whose inlet communicates with the upper zone of the vaporization chamber, said fan drawing a subfraction of the vaporized fraction which is formed in the vaporization chamber and feeding it into an outlet line, a heating device, said outlet line passing through said heating device which superheats said subfraction and carrying at its discharge end a distributor which brings the said superheated subfraction of the vaporized fraction into contact with the contents of said cell, and a condenser connected to the said gas outlet column for condensation and collection of the fraction which has been vaporized in the vaporization chamber.



4,584,063

SEPARATION OF ACETONE FROM METHANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, and Karl J. Warren, 2800 Sheridan Ave., Butte, Mont. 59701

Filed Jun. 28, 1982, Ser. No. 393,071

Int. Cl.[4] B01D *3/40*

U.S. Cl. 203—51 **2 Claims**

1. A method for recovering acetone from a mixture of acetone and methanol which comprises distilling a mixture of acetone and methanol in a rectification column in the presence of about one to two parts of extractive agent per part of acetone-methanol mixture, recovering essentially pure acetone as overhead product and obtaining the extractive agent and methanol from the stillpot or reboiler, the extractive agent comprises at least dimethylsulfoxide.

4,584,064

DEVICE AND INSTALLATIONS FOR THE DISTILLATION BY THIN LAYER EVAPORATION PARTICULARLY OF HYDROCARBONS, AND PROCESS FOR OPERATING THIS DEVICE

André Clais, Mornant, and Gilles Variot, Villeurbanne, both of France, assignors to Elf France, Paris, France

Filed Feb. 10, 1984, Ser. No. 578,952

Claims priority, application France, Feb. 11, 1983, 83 02208

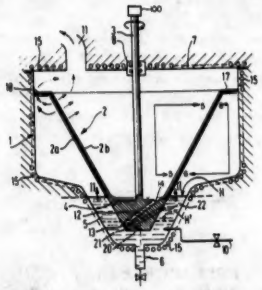
Int. Cl.[4] B01D *3/28*

U.S. Cl. 203—89 **9 Claims**

1. A thin layer evaporation device comprised of, in combination, a sealed enclosure having a cylindrical shape, a vertical axis, at least one hollow cone contained within said enclosure and having the pointed portion in said vertical axis and extending towards the bottom of said enclosure, said cone having at least one channel communicating with the internal and external surfaces of said cone and disposed in said cone so as to provide a rising path between the opening in the external surface of said cone and the outlet in the internal surface of said cone, means for rotating said cone about said vertical axis, means for providing feed liquid to said enclosure and means for evaporating and evacuating vapors from said feed liquid.

9. A process for thin layer evaporation of liquids which comprises introducing said liquids into a thin layer evaporation device comprised of at least one hollow cone contained in a cylindrical sealed enclosure wherein the pointed portion of said cone is in the vertical axis of said cylindrical enclosure and

extends toward the bottom of said enclosure, said cone having at least one channel communicating with the internal and external surfaces of said cone and disposed in said cone so as to provide a rising path between the opening in the external surface of said cone and the outlet in the internal surface of said cone, and rotating said cone about its vertical axis, wherein the



pointed part of the said cone is immersed in said liquid to be evaporated and a communication is established between the external part of the said pointed part of the cone and the internal face of this cone, so that a thin layer of said liquid is formed on the internal face and on the external face of said cone and evaporating vapors from said liquid.

4,584,065

ACTIVATED ELECTRODES

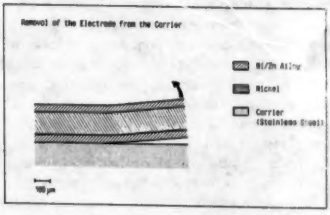
Jiri Divisek; Heinz Schmitz, both of Jülich, and Heinz Wüllenweber, Frankfurt, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich and Metallgesellschaft AG, Frankfurt, both of, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,829

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1983, 3330961

Int. Cl.⁴ C25D *1/08, 1/20, 5/48*

U.S. Cl. 204—11 **30 Claims**



1. A process for the manufacture of an activated electrode comprising galvanically sequentially depositing on a removable electrically-conducting carrier a base metal and an alloy containing said metal with a leachable metal, removing said carrier and leaching said leachable metal to provide an active coating metal.

4,584,066

METHOD AND APPARATUS FOR THE CONTINUOUS ELECTROLYTIC TREATMENT OF A METAL STRIP USING INSOLUBLE HORIZONTAL ELECTRODES

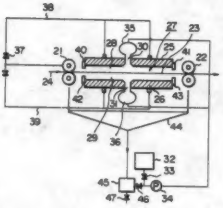
Narumi Ando, Tokyo; Kito Oda, Futtsu; Takashi Saiki; Yoshiaki Hashimoto, both of Kisarazu; Akira Tsuyuki, Kimitsu, and Yoshio Kitazawa, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 330,598, Dec. 14, 1981, abandoned. This application Nov. 8, 1984, Ser. No. 669,733

Claims priority, application Japan, Dec. 16, 1980, 55-176518

Int. Cl.⁴ C25D *5/08, 7/06*

U.S. Cl. 204—28 **20 Claims**



1. A method for the continuous electrolytic treatment of a metal strip with an electrolytic treating liquid using horizontal electrodes substantially insoluble in said electrolytic treating liquid, comprising the steps of:

moving a metal strip horizontally through a narrow treating space formed between a pair of feeding rolls and a pair of delivering rolls and between horizontal upper and lower electrode devices facing each other, each device comprising at least one electrode substantially insoluble in an electrolytic treating liquid to be applied, whereby said treating space is divided into upper and lower horizontal gaps by said metal strip;

feeding upper and lower streams of said electrolytic treating liquid into said upper and lower gaps, respectively, through upper and lower slits, each formed in the middle portions of the corresponding electrode device, each extending horizontally across the corresponding electrode device at substantially right angles to the direction of movement of said metal strip, and each directed vertically to the corresponding surface of the metal strip at substantially right angles to the surface of the metal strip, wherein each slit is unobstructed across its length except for at least one vertically disposed flow-uniforming plate placed in each slit with an orientation parallel to the direction of movement of said metal strip and the width of the feeding end portion of each slit is expanded outwardly facing the corresponding gap whereby uniform streams of electrolytic treating liquid are fed through each slit, and whereby each stream of said electrolytic treating liquid passed into the corresponding gap is divided into a pair of flows concurrent and countercurrent with the movement of said metal strip, each flow having [illegible] flow rate over the corresponding surface of [illegible] strip, and

applying an electric current between each [illegible] and said metal strip through said feeding rolls [illegible] whereby said metal strip is electrolytically treated with said electrolytic treating liquid.

4,584,067

ETCHING OF ALUMINUM ELECTROLYTIC CAPACITOR FOIL

Clinton E. Hutchins, Pownal, Vt.; Derek E. Rougeau, Adams, Mass.; Thomas E. Chalmers, Clarksburg, Mass., and Richard A. Bemis, North Adams, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Feb. 28, 1985, Ser. No. 706,816
Int. Cl.[4] C25D 5/44
U.S. Cl. 204—33 10 Claims

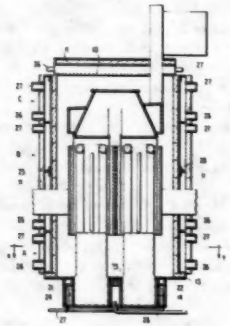
1. A process for etching aluminum electrolytic capacitor foil comprising subjecting a high-cubicity foil to at least one chemical etching stage by passing said foil through a strongly acidic aqueous solution containing 1.4 to 2.3 moles/liter of an acid having anions capable of anodizing aluminum, 1.1 to 1.7 moles/liter of hydrochloric acid, an initial concentation of at least 0.2 mole/liter of aluminum ions, and 10 to 2000 mg/liter of transition ions as a first etching step, and then subjecting said foil to a second etching step.

4,584,068

DEVICE AND PROCESS FOR THE FUSED-SALT ELECTROLYSIS OF ALKALI METAL HALIDES

Walter Hinrichs; Ludwig Lange, both of Bruehl; Friederich Hammer, Frechen-Habbelrath, and Hans Ludwig, Erftstadt, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,051
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1983, 3340294
Int. Cl.[4] C25C 3/02
U.S. Cl. 204—68 14 Claims



12. A process for producing an alkali metal by electrolysis of a fused halogen salt of the alkali metal by operation of a fused salt electrolysis device having a current discharge sleeve comprising removing excess heat caused by an increase in the current load or progressive anode wear, through the current discharge sleeve region and/or vessel region and/or vessel cover region in a controlled manner by contacting with positively guided heat exchange media in a zone surrounding the said region and, in the case of a decrease in the current load, the particularly radiation caused heat discharge through the above mentioned regions is dammed or is reduced in a controlled manner by contact with a supply of heat in a zone surrounding these regions.

4,584,069

ELECTRODE FOR CATALYTIC ELECTROHYDROGENATION OF ORGANIC COMPOUNDS

Jean Lessard, and Gérard Belot, both of Sherbrooke, Canada, assignors to Universite de Sherbrooke, Quebec, Canada

Filed Feb. 22, 1985, Ser. No. 704,461
Int. Cl.[4] C25B 3/00
U.S. Cl. 204—74 11 Claims

1. An electrode adapted after activation for the selective electrocatalytic hydrogenation of nitro groups of organic compounds to amino groups comprising a thin grid of metallic material coated with a thin layer of nickel, the latter being itself coated with a further layer of nickel in which are dispersed or embedded fine particles of Devarda copper alloy or Raney copper alloy.

4,584,070

PROCESS FOR PREPARING PARA-AMINOPHENOL

Norman R. DeLue, Akron, and Stanley R. Pickens, Wadsworth, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1985, Ser. No. 717,619
Int. Cl.[4] C25B 3/00
U.S. Cl. 204—74 20 Claims

1. In the method of preparing para-aminophenol by electrolytic reduction of nitrobenzene in an acidic, aqueous reaction medium, the improvement which comprises emulsifying the nitrobenzene reactant in the acidic, aqueous reaction medium with a trialkylamine-N-oxide surfactant and electrolyzing said emulsified reaction medium.

4,584,071

PROCESS FOR ELECTROLYSIS OF BRINE WITH IODIDE IMPURITIES

Thomas C. Bissot, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US83/00445, § 371 Date Oct. 30, 1984, § 102(e) Date Oct. 30, 1984, PCT Pub. No. WO84/03904, PCT Pub. Date Oct. 11, 1984
PCT Filed Mar. 30, 1983, Ser. No. 690,481
Int. Cl.[4] C25B 1/16, 1/26
U.S. Cl. 204—98 4 Claims

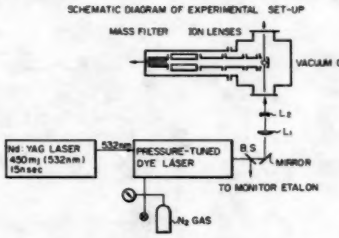
1. In an electrolytic process for the production of chlorine and an alkali metal hydroxide from alkali metal chloride brines containing soluble, iodine-containing salts and employing an electrolytic cell comprising an anode compartment containing an anode and aqueous alkali metal chloride and a cathode compartment containing a cathode and aqueous alkali metal hydroxide, said compartments being separated by a fluorocarbon cation-exchange membrane containing at least one of the types of cation-exchange groups selected from carboxyl cation exchange groups and sulfonyl cation exchange groups and through which an electrical current is passed at a current density in the range of 20 to 80 A/dm^2 while continuously adding concentrated alkali metal chloride free from harmful levels of alkali earth salts, iron and other heavy metal salts to the anode compartment and continuously removing chlorine and depleted anolyte solution from the anode compartment and continuously adding water or dilute alkali metal hydroxide to the cathode compartment and continuously removing alkali metal hydroxide having a concentration maintained at a value between 20% and 45% by weight from the cathode compartment, the improvement which comprises using a concentrated alkali metal chloride having a concentration of iodine-containing salts of not higher than 1 ppm.

4,584,072

PROCESS FOR SEPARATING AN ISOTOPE FROM A MIXTURE OF DIFFERENT ISOTOPES BY USING A SINGLE LASER BEAM

Takashi Arisawa; Yoichiro Maruyama; Youji Suzuki, and Kazumi Iwamoto, all of Ibaraki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 473,131
Claims priority, application Japan, Mar. 10, 1982, 57-37483
Int. Cl.[4] B01D 59/00; C01G 43/00
U.S. Cl. 204—157.22 1 Claim



1. A process for separating a particular isotope from a mixture of different isotopes of an element by selective exitation and ionization of the particular isotope with a single laser beam, said process comprising:

heating an isotopic mixture to form an atomic vapor comprising uranium-235, each of the atoms of the atomic vapor being in a ground state;

converting the resulting atomic vapor to a highly directional atomic beam by suitable means;

causing said atomic beam to travel through a vacuum,

crossing the atomic beam with a single laser beam having a wavelength selected from the group consisting of approximately 5027; 5511; 5620; 5758; 5915 and 5971 angstroms and an intensity of about 3×10^5 to 10^6 W/cm^2;

selectively exciting the particular isotope with a first photon from said laser beam while the other isotopes remain in the ground state;

allowing the excited isotope to absorb a second photon from said laser beam to be excited to a virtual energy level,

causing the so excited isotope to absorb a third photon from said laser beam to ionize said isotope, and

recovering the ionized isotope by use of an electric of electromagnetic field.

4,584,073

PROCESS AND APPARATUS FOR ISOTOPIC ENRICHMENT USING LASERS

Edward J. Lahoda, Edgewood; Herbert A. Burgman, Murrysville, and Thomas S. Snyder, Wilkins Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1983, Ser. No. 564,060
Int. Cl.[4] B01D 59/00
U.S. Cl. 204—157.2 30 Claims

1. A process for the separation of a first isotope of an element from other isotopes of the element, wherein said isotopes are present as a mixture in an isotopic compound, and wherein one of said isotopic compounds is excitable by light at a wavelength where the other said isotopic compounds remain stable, comprising:

coating a plurality of discrete, small bead particles, which particles are transparent at said wavelength, with a monolayer of said mixture of isotopic compound;

entraining said plurality of coated particles in a carrier gas containing a scavenger gas for an excited one of said isotopic compounds;

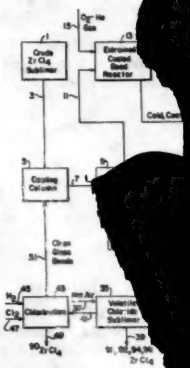
exposing said plurality of coated particles, while so entrained to light, to excite one of said isotopic compounds

and cause … avenger gas and form a rea… r isotopic compounds rem…

separating said … other isotopic compounds.

21. An apparatu… isotope of an element from other iso… erein the isotopes are present as a mixtu… mpound, and where one of said isotopic comp… by light at a wavelength where the other isotopi… remain stable comprising:

means for coating discrete, small bead… which parti-



cles are transparent at said wavelengt… of said mixture of isotopic compound;

means for entraining the coated bead partic… gas containing a scavenger gas for an exc… isotopic compounds;

a reaction in which said coated entrained beads …

a light source directing light of said wavelengt… coated entrained beads in said reaction vessel, … one of said isotopic compounds is excited by said l… reacts with said scavenger gas to form a reaction pr… while the other isotopic compounds remain stable; an…

means for separating said reaction product from said othe… isotopic compounds.

4,584,074

CAPACITORS

Henley F. Sterling, Great Dunmow; Eric L. Bush, Near Harlow, and John H. Alexander, Stortford, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 480,446, Mar. 30, 1983, abandoned.
This application Jan. 30, 1985, Ser. No. 696,859
Claims priority, application United Kingdom, Dec. 7, 1982, 8234823
Int. Cl.[4] C25D 13/02, 13/12, 1/14
U.S. Cl. 204—181.1 10 Claims

1. A process for fabricating a multi-layer ceramic capacitor comprising:

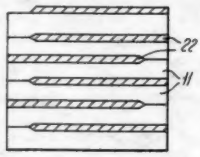
electrodepositing a layer of a mixture of a ceramic powder and a resin material onto a conductive electrode to form a dielectric layer;

performing at least twice a succession of steps to form a stack, including:

depositing a permanent electrode material in a predetermined area on a surface of the dielectric layer said predetermined area being less than the entire surface of the dielectric layer;

coating the remaining area on the surface with a temporary electrode material;

electrodepositing a layer of a mixture of a ceramic powder and a resin material onto both the permanent electrode material and the temporary electrode material;



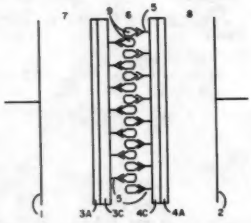
heating the stack to convert the temporary electrode material to an insulating material, to remove the resin material and cure the ceramic dielectric layer.

4,584,075

PROCESS AND APPARATUS FOR ELECTRICALLY DESORBING COMPONENTS SELECTIVELY SORBED ON AN ELECTROLYTICALLY CONDUCTING BARRIER

Arthur L. Goldstein; Edgar Haber, both of Weston, and Robert J. Mandle, Lexington, all of Mass., assignors to Ionics Incorporated, Watertown, Mass.

Filed Nov. 26, 1984, Ser. No. 675,057
Int. Cl.[4] C07K *3/18*
U.S. Cl. 204—182.3 **9 Claims**



1. A method of recovering biospecifically, sorbable components dispersed in an aqueous solution comprising:

(a) contacting said solution as a first solution with an electrolytically conducting barrier having biospecific sorbing properties for at least one of said components whereby a substantial fraction of said components in said solution having biospecific binding affinity for said barrier is sorbed by said barrier;

(b) removing said first solution from contact with the said barrier;

(c) contacting said barrier with a second aqueous solution;

(d) passing a direct electric current through said barrier and said second solution in a direction approximately parallel to the smallest dimension of said barrier thereby facilitating the desorption of at least one of said components having biospecific binding affinity for the said barrier into said second solution; and

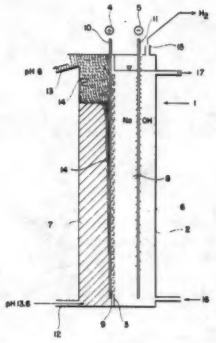
(e) removing said second solution from contact with said barrier.

4,584,076

PROCESS FOR OBTAINING LIGNIN FROM ALKALINE SOLUTIONS THEREOF

Eugen Edel; Josef Feckl; Clemens Grambow, all of Munich; Albert Huber, Dachau, and Dietrich Wabner, Munich, all of Fed. Rep. of Germany, assignors to MD-Organocell Gesellschaft fuer Zellstoff- und Umwelttechnik mbH, Fed. Rep. of Germany

Filed Oct. 29, 1984, Ser. No. 665,882
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1983, 3339449
Int. Cl.[4] B01D *13/02*
U.S. Cl. 204—182.4 **28 Claims**



12. A multistage process for obtaining lignin from an alkaline lignin solution, comprising:

anodically acidifying the alkaline lignin solution by electrolysis, in a first stage, to a pH corresponding to the onset of lignin precipitation;

thereafter further acidifying the solution in succeeding stages to effect precipitation of the lignin.

4,584,077

PROCESS FOR RECOVERING SODIUM CARBONATE FROM TRONA AND OTHER MIXTURES OF SODIUM CARBONATE AND SODIUM BICARBONATE

Frederick P. Chlanda, Rockaway, and Krishnamurthy N. Mani, Denville, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 13, 1984, Ser. No. 639,769
Int. Cl.[4] B01D *13/02*
U.S. Cl. 204—182.4 **27 Claims**

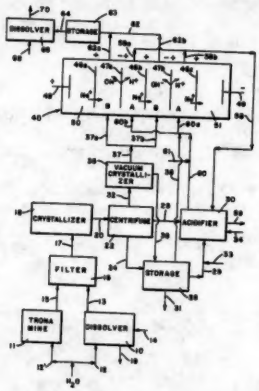
1. A process for converting materials comprising sodium carbonate and sodium bicarbonate into a liquid comprising sodium carbonate substantially free of sodium bicarbonate comprising the steps of:

(a) forming an aqueous solution comprising sodium carbonate and sodium bicarbonate;

(b) removing a portion of said sodium bicarbonate from said solution to form a mother liquor comprising sodium carbonate and a reduced amount of sodium bicarbonate;

(c) subjecting the mother liquor to electrodialytic water splitting by circulating the mother liquor through a bare compartment of an electrodialytic water splitter to produce a

liquid reaction product comprising sodium carbonate substantially free of sodium bicarbonate; and



(d) withdrawing the liquid reaction product from the electrodialytic water splitter.

4,584,078

METHOD OF PRODUCING FINE PARTICLES

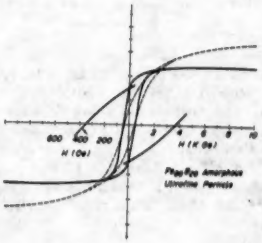
Yukio Nakanouchi, 9-8, Honcho 3-chome,, Ageo-shi, Saitama; Shigehiro Ohnuma, 4-126, Oidemae, Moniwa-aza, and Tsuyoshi Masumoto, 8-22, Kamisugi 3-chome, both of Sendai-shi, Miyagi, all of Japan, assignors to Yukio Nakanouchi, Ageo; Shigehiro Ohnuma; Tsuyoshi Masumoto, both of Sendai and Research Development Corporation of Japan, Tokyo, all of, Japan

Filed Aug. 1, 1984, Ser. No. 636,759

Claims priority, application Japan, Aug. 10, 1983, 58-144923

Int. Cl.[4] C23C *15/00*

U.S. Cl. 204—192 R **8 Claims**



1. A method of producing fine particles comprising sputtering metallic or non-metallic materials onto a substrate having fine projections densely formed on the surface thereof, said fine projections having a height of at least 0.05 μm and a diameter ranging essentially from 0.01 to 5 μm and the number of said projections per unit area of said substrate being essentially in the range of 1×10^3 to 2×10^8 projections/mm^2, in an inert gas or a mixture of an inert gas and a reactive gas at a pressure in the range of 1×10^{-4} torr to 1×10^{-1} torr, and thereby depositing metallic or non-metallic fine particles having a crystalline or amorphous structure on said substrate.

4,584,079

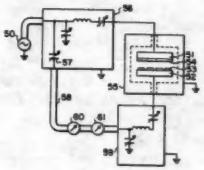
STEP SHAPE TAILORING BY PHASE ANGLE VARIATION RF BIAS SPUTTERING

Eddie C. Lee, Bloomington, and William H. Nunne, New Hope, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 11, 1983, Ser. No. 540,246

Int. Cl.[4] C23C *15/00*

U.S. Cl. 204—192 S **2 Claims**



1. A method for tailoring the shape of a dielectric layer covering a step in a semiconductor device, comprising:

placing the semiconductor device comprising the step into a low pressure ionization chamber comprising a target electrode and a substrate electrode;

connecting a sample of the dielectric to the target electrode;

placing the semiconductor device comprising the step onto the substrate electrode;

powering the target electrode and the substrate electrode with radio frequency power having a phase angle between the substrate electrode and the target electrode; and

adjusting the phase angle to obtain the desired non-planar shape of the dielectric layer covering the step.

4,584,080

BIPOLAR ELECTROLYSIS APPARATUS WITH GAS DIFFUSION CATHODE

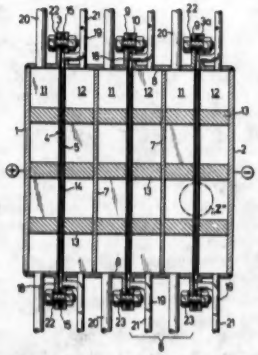
Rudolf Staab, and Kurt Hannesen, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 29, 1985, Ser. No. 738,874

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420483

Int. Cl.[4] C25B *9/00, 9/02*

U.S. Cl. 204—255 **6 Claims**



1. A bipolar electrolysis apparatus with an anode and an oxygen-consuming cathode for the production of chlorine from aqueous alkali metal chloride solution in combination with means for supplying electrolysis current to the apparatus, means for supplying electrolysis feed materials to the appara-

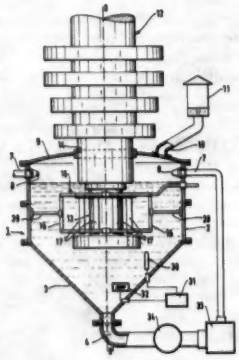
tus, and means for discharging electrolysis output products from the apparatus, a partition arranged to separate the anode and cathode from one another, the electrolysis apparatus comprising at least one element (6) in the form of a twin trough located between two half-shells (1, 2) each having edges formed as a flange (3, 3a) and of which one flange carries an anode (4) and the second flange carries a cathode (5), which twin trough is formed by a common plate (7) and a lateral wall (8), the height of which is divided by the plate and the edges of which are provided with flanges (9, 10), the anode (4) and the cathode (5) which are separated from one another in space by the plate (7) being electrically conductively connected to the wall (8) and to struts (13) which protrude vertically from the plate (7) on both sides, the partitions (14) being clamped in between the flanges (3, 3a, 9, 10) of the half-shells (1, 2) and of the element (6), and sealing elements (15) being arranged in such a way that a cavity (16) is formed between the partition (14) and the cathode (5).

4,584,081

APPARATUS FOR DEPOSITING METAL ON THE RUBBING PARTS OF A TURBINE ROTOR

André Coulon, Bessancourt, France, assignor to Alsthom-Atlantique, Paris, France

Filed Apr. 26, 1985, Ser. No. 727,635
Claims priority, application France, Apr. 26, 1984, 84 06589
Int. Cl.⁴ C25D *17/00, 17/12, 21/10*
U.S. Cl. 204—272 **3 Claims**



1. Apparatus for depositing metal, said apparatus comprising:

a vat having a vertical axis 00′ constituted by a cylindrical portion terminated by a conical portion, said vat being filled with electrolyte;

first means disposed near the top of said vat for feeding the vat with electrolyte;

second means situated at the bottom of the vat for emptying the electrolyte;

third means situated between the second means and the first means for regenerating and circulating the electrolyte;

fourth means for supporting a curtain of anodes made of the metal to be deposited and for rotating the electrolyte about the axis 00′; and

fifth means for applying current of given polarity to the curtain of anodes;

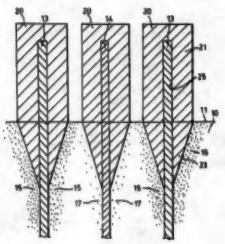
said apparatus including the improvement whereby said fourth means are constituted by two cylindrical half-shells about the axis 00′, each including a semi-circular frame on which the anodes are fixed parallel to the axis 00′, said anodes being surrounded on the outside by hollow tubes parallel to said axis 00′ and interconnected by hollow conduits which are likewise semi-circular in shape and which are fed with compressed gas, the conduits and the frames being fixed to one another by insulators, and the tubes and the conduits being fitted with nozzles which eject compressed gas in horizontal directions at angles close to 45° with the horizontal lines joining the respective nozzles to the axis 00′.

4,584,082

METHOD AND APPARATUS FOR ACID MIST REDUCTION

James W. Smith, 33 Airdire Rd., Toronto, Ontario, Canada (M4G 1L8)

Filed Oct. 10, 1984, Ser. No. 659,525
Claims priority, application United Kingdom, Oct. 12, 1983, 8327300
Int. Cl.⁴ C25B *9/00*
U.S. Cl. 204—278 **6 Claims**



1. A method of coalescing bubbles produced at an electrode in an electrolytic process in which electrodes consisting of at least one anode and at least one cathode are adjacent but spaced from one another, and are substantially immersed in the electrolyte, the method comprising:

affixing to at least one electrode a surface-limiting electrically inert masking means of which at least the bottom portion is submerged in the electrolyte, the masking means extending over the whole upper portion of said one electrode and projecting above the surface of said electrolyte, thus reducing the free surface of the electrolyte between the electrodes, and

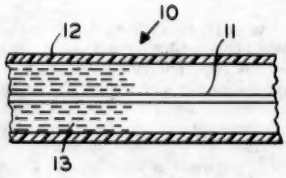
passing current between the electrodes, thus generating gas bubbles at at least one electrode, the gas bubbles being urged together by the masking means and coalescing.

4,584,083

ELECTRODE APPARATUS FOR ELECTROSTATICALLY RESOLVING EMULSIONS

John P. Wagner, Martinsville, and Edward C. Hsu, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 255,871, Apr. 20, 1981, Pat. No. 4,409,078. This application Dec. 27, 1982, Ser. No. 453,528
Int. Cl.⁴ C25B *11/02;* **B01D** *13/02;* **H01B** *1/00*
U.S. Cl. 204—280 **11 Claims**



1. An electrostatic current-carrying electrode for use in a

coalescence apparatus, consisting essentially of an inner support member of electrically conductive material, an outer flexible plastic tube surrounding said inner support member adapted for support of the tube thereby and being concentrically spaced therefrom so as to provide a space therebetween, said support member extending for substantially the entire length of said plastic tube, and an electrolyte disposed within said space between said support member and said plastic tube, said plastic tube insulating said support member and said electrolyte from direct contact from fluids in a coalescence apparatus under conditions of use.

4,584,084

DURABLE ELECTRODE FOR ELECTROLYSIS AND PROCESS FOR PRODUCTION THEREOF

Hiroshi Asano, Kanagawa; Takayuki Shimamune, Tokyo; Kazuhiro Hirao, and Ryuta Hirayama, both of Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Mar. 4, 1985, Ser. No. 707,988
Claims priority, application Japan, Mar. 2, 1984, 59-38733
Int. Cl.[4] C25B *11/00*; B05D *5/12*
U.S. Cl. 204—290 F 9 Claims

1. An electrolytic electrode consists essentially of:

(a) an electrode substrate of an electrically-conductive metal;

(b) an electrode coating of an electrode active substance; and

(c) an intermediate layer provided between the electrode substrate (a) and the electrode coating (b), wherein said intermediate layer (c) comprising a mixed oxide of

(i) an oxide of at least one member selected from the group consisting of titanium and tin, each having a valence number of 4, in an amount of about 60 to about 95% by weight based on the weight of metal, and

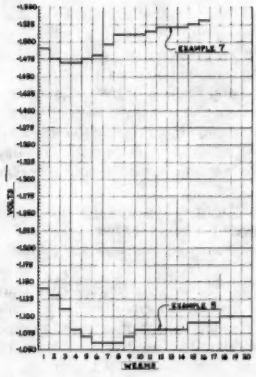
(ii) an oxide of at least one member selected from the group consisting of aluminum, gallium, iron, cobalt, nickel and thallium, each having a valence number of 2 or 3, in an amount of about 5 to about 40% by weight based on the weight of metal.

4,584,085

PREPARATION AND USE OF ELECTRODES

R. Neal Beaver; Lloyd E. Alexander, both of Angleton, and Carl E. Byrd, Richwood, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 499,626, May 31, 1983. This application Dec. 17, 1984, Ser. No. 682,505
Int. Cl.[4] C25B *11/08*
U.S. Cl. 204—290 R 22 Claims



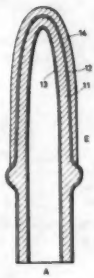
1. An electrode material comprising a layer of nickel metal having tightly adhered thereto a heterogeneous metal oxide coating, said heterogeneous metal oxide coating consisting essentially of nickel oxide and a platinum group metal oxide.

4,584,086

DEVICE FOR DETECTING CONCENTRATION OF OXYGEN IN EXHAUST GAS

Nobuhiro Hayakawa; Masahiko Yamada, and Toshiyuki Ishihara, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Apr. 16, 1985, Ser. No. 723,979
Claims priority, application Japan, Apr. 16, 1984, 59-77328
Int. Cl.[4] G01N *27/58*
U.S. Cl. 204—429 2 Claims



1. A device for detecting the concentration of oxygen in an automotive exhaust gas, comprising: an oxygen-ion-conductive solid electrolyte positioned between a reference gas and a gas to be measured, said electrolyte generating an electromotive force proportional to a differential oxygen concentration between the two gases, and electrodes made of an electroconductive material, a first one of said electrodes being located on a surface of said oxygen-ion-conductive solid electrolyte contacted by said reference gas and a second one of said electrodes being located on a surface of said solid electrolyte contacted by said gas to be measured, said surface of said electrode in contact with said gas to be measured being coated with a protective, heat-resistive metal oxide layer having supported thereon uniformly a lead-trapping, thermally stable metal, said lead-trapping metal being present in a molar amount of 0.4 to 3% of said metal oxide, wherein:

said protective layer is formed by first chemically plating or evaporating said lead-trapping metal onto said heat-resistive metal oxide powder(s), and then plasma spraying the thus-treated metal oxide powder(s) onto the second electrode, and wherein said protective layer has a thickness in a range of 150 to 500 microns.

4,584,087

RECOVERY OF A CARBONACEOUS LIQUID WITH A LOW FINES CONTENT

Lawrence B. Peck, Glen Ellyn, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 14, 1982, Ser. No. 449,607
Int. Cl.[4] C10G *1/04*
U.S. Cl. 208—11 LE 10 Claims

1. A method for recovering bitumen from a carbonaceous solid containing extractable bitumen and for removing solid fines from the recovered bitumen comprising:

(a) contacting the carbonaceous solid with a solvent to dissolve at least 75 weight % of the bitumen in the carbonaceous solid in the solvent and to leave undissolved 1 to 25 weight % of the bitumen, and thereby to form a lower solid phase of coarse solids and an upper suspension of undissolved bitu-

men and fine solids in a solvent-dissolved bitumen liquid phase;

(b) separating the upper suspension from the lower solid phase of coarse solids;

(c) permitting at least a portion of the suspended undissolved bitumen to settle, with at least a portion of the suspended fines agglomerating and settling with the undissolved bitumen to form a second lower solid phase;

(d) separating the upper solvent dissolved bitumen liquid phase from the second lower solid phase; and

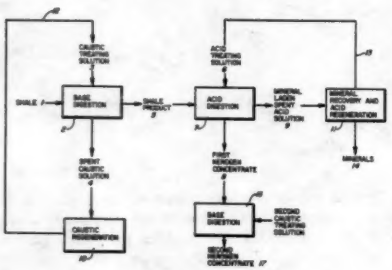
(e) separating the solvent and the bitumen fractions of the solvent-dissolved bitumen phase.

4,584,088

METHOD FOR TREATING SHALE

John D. McCollum, Naperville, and William F. Wolff, Park Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 12, 1984, Ser. No. 630,368
Int. Cl.[4] C10G *1/04*
U.S. Cl. 208—11 LE **16 Claims**



1. A method for treating oil shale containing kerogen comprising treating oil shale with a first aqueous caustic treating solution at a temperature in the range of from about 140° C. to 200° C. under treating conditions sufficient to transform minerals present in the oil shale into extractable forms to produce a shale product of transformed mineral content; treating the shale product with an aqueous acid solution to produce a first kerogen concentrate; and treating the first kerogen concentrate with a second aqueous caustic solution to produce a second kerogen concentrate of low ash content.

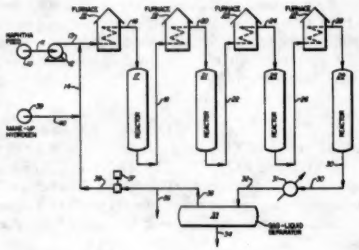
4,584,089

BOROSILICATE-CONTAINING CATALYST AND REFORMING PROCESSES EMPLOYING SAME

Eugene E. Unmuth, Naperville, and Louis C. Gutberlet, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 544,724, Oct. 24, 1983. This application Feb. 6, 1985, Ser. No. 698,557
Int. Cl.[4] C10G *35/06*
U.S. Cl. 208—65 **9 Claims**

1. A process for the reforming of a hydrocarbon stream, which process comprises contacting said hydrocarbon stream in a first reforming zone in the presence of hydrogen and under reforming conditions with a first catalyst to provide a partially-reformed effluent and contacting said partially-reformed effluent in a second reforming zone under reforming conditions and in the presence of hydrogen with a second catalyst to provide a reformed effluent having a high octane number, said first catalyst comprising at least one noble metal of Group VIII of the Periodic Table of Elements and a combined halogen on a porous, refractory inorganic oxide support, said second catalyst comprising a physical particle-form mixture of a Component A and a Component B, said Component A comprising at least one noble metal of Group VIII deposed on a solid catalyst support material providing acidic catalytic sites, said Component B consisting essentially of a crystalline borosilicate molecular sieve, said catalyst having been prepared by thoroughly and intimately blending finely-divided particles of said Components A and B to provide a thoroughly-blended composite, and said Component B being present in an amount within the range of about 0.1 wt% to about 25 wt%, based upon the weight of said second catalyst.

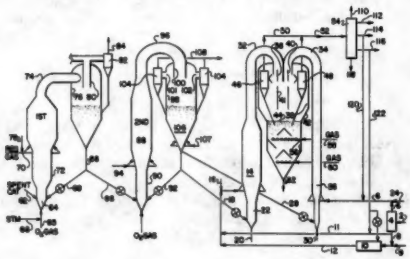


4,584,090

METHOD AND APPARATUS FOR CATALYTICALLY CONVERTING FRACTIONS OF CRUDE OIL BOILING ABOVE GASOLINE

Carl D. Farnsworth, 2401 Sedley Rd., Charlotte, N.C. 28211

Filed Sep. 7, 1984, Ser. No. 648,090
Int. Cl.[4] C10G *51/06, 55/08*
U.S. Cl. 208—80 **20 Claims**



20. A method for upgrading a residual portion of a crude oil to form gasoline and light cycle oil which comprises,

(a) separating a residual portion of crude oil into a relatively low boiling fraction comprising atmospheric gas oil from a higher boiling fraction of said residual oil,

(b) solvent deasphalting at least the resid portion of vacuum distillation of said higher boiling fraction and recovering a deasphalted oil product from a deasphalting solvent selected from propane, butane, pentane, hexane and combinations thereof,

(c) partially hydrogenating said deasphalted oil product in the presence of a heavy vacuum gas oil fraction boiling intermediate said light vacuum gas oil and said vacuum resid,

(d) passing said partially hydrogenated oil product mixed with an atomizing diluent material in contact with an upwardly flowing low coke producing crystalline zeolite containing catalyst suspended in a gas comprising hydrogen in a first riser heavy oil feed hydrocarbon conversion zone,

(e) passing said separated low boiling fraction of crude oil with light vacuum gas oil in contact with a separate rising

suspension of said elevated temperature low coke producing crystalline zeolite containing catalyst suspended in a gas comprising hydrogen in a second riser hydrocarbon conversion zone,

(f) effecting a partial centrifugal separation between hydrocarbon conversion product vapors and catalyst particles in a semi-circular section of each of said first and second riser conversion zones before effecting discharge thereof downwardly into the upper portion of a large separation and catalyst collection zone in open communication in the bottom thereof with a lower catalyst stripping zone,

(g) withdrawing discharged separated vapors into cyclone separation zones radially displaced outside the lower locus of each riser downward discharge opening,

(h) passing downwardly discharged separated catalyst through said stripping zone counter current to stripping gas thereafter recovered by said cyclones,

(i) recovering hydrocarbon conversion products of said riser conversion zones from said cyclone separation zones,

(j) passing the stripped catalyst through a sequence of separate riser regeneration zones maintained at a temperature above 1300° F. wherein the presence of steam in the first regeneration zone is sufficient to achieve a limiting combustion temperature level and the combustion of residual carbon on partially regenerated catalyst is accomplished in a second riser regeneration zone with oxygen containing gas in the absence of steam at a temperature above the temperature in the first riser regeneration zone, and

(k) passing regenerated catalyst at a temperature between 1400° and 1600° F. to each of said first and second riser hydrocarbon conversion zones.

4,584,091

CRACKING WITH CO-MATRIXED ZEOLITE AND P/ALUMINA

Lloyd A. Pine, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 681,450, Dec. 13, 1984. This application Dec. 31, 1984, Ser. No. 687,853

Int. Cl.⁴ C10G *11/02*

U.S. Cl. 208—114 **11 Claims**

1. A process for the catalytic cracking of a hydrocarbon feed which comprises: contacting said feed at catalytic cracking conditions with a catalyst comprising: (a) a crystalline metallosilicate zeolite; (b) a non-zeolitic inorganic oxide matrix, said zeolite being dispersed in said matrix, and (c) discrete particles of phosphorus-containing alumina also dispersed in said matrix, said discrete particles having been prepared by contacting alumina having a BET surface area greater than 50 square meters per gram with a phosphorus compound selected from the group consisting of phosphoric acid, a salt of phosphoric acid, phosphorous acid, a salt of phosphorous acid, and mixtures thereof, for a time sufficient to incorporate an effective amount of phosphorus in said alumina.

4,584,092

DEHYDRATING METHOD

Tetuo Kanematu, Himeji, and Saburo Hamano, Kobe, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Dec. 28, 1984, Ser. No. 687,303

Claims priority, application Japan, Dec. 29, 1983, 58-245775; Dec. 29, 1983, 58-245776

Int. Cl.⁴ C10G *33/04*

U.S. Cl. 208—188 **10 Claims**

1. A method for removing water from an organic liquid that contains water, which comprises flowing said organic liquid through a sheet of porous filter paper consisting essentially of from 0 to 40 percent by weight of cellulose fibers and from 60 to 100 wt.% of fibers of an alkali metal salt of carboxymethylcellulose whereby to cause the water to be absorbed by said alkali metal salt of carboxymethylcellulose, said alkali metal salt of carboxymethylcellulose having a degree of substitution of from 0.3 to 1.0, and said sheet having a basis weight of from 20 to 300 g/m^2 and an air permeability of not greater than 20 seconds.

4,584,093

PROCESS FOR THE HYDROTREATMENT OF HYDROCARBON OIL EMPLOYING CATALYSTS BASED ON ALUMINA, SILICA OR SILICA-ALUMINA

Hervé Toulhoat, Le Pecq; Jean-Claude Plumail, Le Vesinet; Marc Mercier, Ales, and Yves Jacquin, Sevres, all of France, assignors to Ste Francaise des Produits pour Catalyse Pro-Catalyse chez Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 544,148, Oct. 21, 1983, Pat. No. 4,510,255. This application Jan. 22, 1985, Ser. No. 693,087

Claims priority, application France, Oct. 21, 1982, 82 17769

Int. Cl.⁴ C10G *45/04*

U.S. Cl. 208—216 R **19 Claims**

1. A method for hydrotreating a hydrocarbon oil, which comprises contacting the hydrocarbon oil with a catalyst in the presence of hydrogen, said catalyst comprising at least one carrier material whose base element is alumina, silica or silica-alumina and at least one active element selected from the metals of groups V, VI and VIII or compounds thereof, wherein the carrier is shaped into balls, said balls are calcined at about 300° to 1000° C. and then crushed and the resultant particles whose average size represents 0.2 to 0.8 times the average diameter of the balls are recovered, and the catalyst is dried and thermally activated.

4,584,094

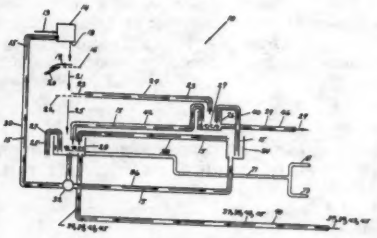
METHOD AND APPARATUS FOR RECLAIMING COAL

William H. Gadsby, Treeneuk, Slack Lane, Ashgate, Chesterfield, Derbyshire, England

Filed Jun. 6, 1984, Ser. No. 617,984

Int. Cl.⁴ B03B *7/00*

U.S. Cl. 209—17 **16 Claims**



11. A system for separating coal from refuse comprising:

first scrubber means for creating a first slurry consisting of a feed stock of coal and refuse material and a liquid medium;

first separation means for separating particulate material of over a predetermined first size from the first slurry, thereby creating a second slurry;

second separation means for separating particulate material of less than the first predetermined particulate size and larger than a second predetermined size from the second slurry thereby creating a first effluent;

means for mixing a selected portion of the liquid medium with the particulate material separated from the second slurry by the second separation means thereby creating a third slurry of preselected specific gravity;

third separation means for separating the third slurry into a fourth slurry of lesser specific gravity than the third slurry, and a fifth slurry of greater specific gravity than the third slurry;

means for separating coal particulates from the fourth slurry;

means for collecting the effluent of the fourth slurry result-

ing from separation of the coal particles from the fourth slurry as a second effluent;

means for separating refuse material from the fifth slurry;

means for collecting the effluent of the fifth slurry resulting from separation of the refuse material from the fifth slurry as a fourth effluent; and

means for mixing the second and fourth effluents collected from the fourth and fifth slurries with the first effluent to form the liquid medium.

4,584,095

ORE FLOTATION METHOD EMPLOYING PHOSPHORODITHIO COMPOUNDS AS FROTHER ADJUVANTS

Kim N. Unger, Tucson, Ariz., assignor to Thiotech, Inc., Tucson, Ariz.

Filed Jun. 20, 1984, Ser. No. 622,474
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—166 **10 Claims**

1. An ore dressing method for recovering copper or molybdenum metal values from their ores by froth flotation, wherein flotation is conducted in the presence of a collector for copper or molybdenum and in the presence of a frothing agent mixture consisting essentially of (I) a frother selected from the class consisting of (A) aliphatic alcohols of from 3 to 10 carbon atoms, (B) terpenic oils, and (C) polyalkylene and polyoxyalkylene glycols and polyoxyalkylene glycol ethers; and (II) a frother adjuvant comprising a phosphorodithioic compound of the formula:

$$X-S-\underset{\underset{S}{\|}}{P}(OR)_2$$

wherein X is selected from the class consisting of hydrogen, alkali metal, and the ammonium radical and R is an alkyl-substituted phenyl radical having a total of from 8 to 14 carbon atoms, from 1 to 3 alkyl substituents, and from 2 to 6 carbon atoms in each alkyl substituent, said phosphorodithioic compound comprising from about 16.7 to 20 percent by weight of the mixture and recovery of copper or molybdenum from the forth.

4,584,096

PROCESS TO BENEFICIATE PHOSPHATE AND SAND PRODUCTS FROM DEBRIS AND PHOSPHATE TAILING ORES

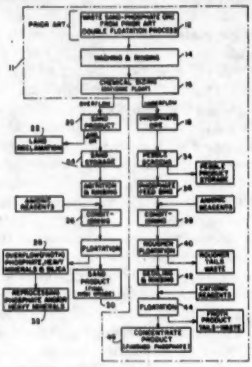
George M. Lilley, Lakeland, Fla., assignor to J. Warren Allen, Lithia, Fla.

Filed Feb. 11, 1982, Ser. No. 347,693
Int. Cl.[4] B03D *1/14*
U.S. Cl. 209—166 **4 Claims**

1. The method of beneficiating phosphate tailings containing sand, phosphate and other materials to produce phosphate, the phosphate tailings being formed by treating ore containing phosphate, sand and other materials by a double flotation process wherein the ore is firstly treated with an anionic reagent from producing a first overfloat containing enriched phosphate and for producing a first underfloat in the form of rougher tailings containing sand, some phosphate and other materials; secondly treating the first overfloat with a cationic reagent for producing a second underfloat containing predominantly phosphate and for producing a second overfloat in the form of froth product tailings containing sand, some phosphate and other materials, the improvement comprising:

treating the tailings with a cationic reagent and water for producing a third overfloat containing predominantly sand and other materials and for producing a third underfloat containing phosphate; and

treating the third underfloat containing the phosphate in a subsequent double flotation process including fourthly treating the third underfloat with an anionic reagent to produce a fourth overfloat and fifthly treating the fourth



overfloat with a cationic reagent to produce a fifth underfloat containing a high grade phosphate.

4,584,097

NEUTRAL HYDROCARBOXYCARBONYL THIONOCARBAMATE SULFIDE COLLECTORS

Yun-Lung Fu, Milford, and Samuel S. Wang, Cheshire, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 17, 1984, Ser. No. 641,657
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—166 **7 Claims**

1. In a froth flotation process for beneficiating an ore containing sulfide minerals comprising slurrying liberation sized particles of said ore in an aqueous medium, conditioning said slurry with effective amounts of a frothing agent and a metal collector, respectively, and collecting the desired sulfide minerals in the froth by froth flotation, the improvement comprising: employing as the metal collector, at least one hydrocarboxycarbonyl thionocarbamate compound having the formula:

$$R^1O-\overset{\underset{O}{\|}}{C}-\overset{\underset{H}{|}}{N}-\overset{\underset{S}{\|}}{C}-OR^2$$

wherein R^1 is an alkyl radical of 1–6 carbon atoms and R^2 is an alkyl radical of 1–8 carbon atoms.

4,584,098

ORE CONCENTRATOR

Winston Wright, 2660 Fair Cir., Reno, Nev. 89503

Filed Sep. 26, 1983, Ser. No. 535,427
Int. Cl.[4] B03B *5/50*
U.S. Cl. 209—430 **15 Claims**

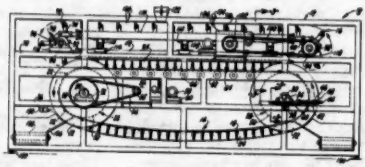
1. A concentrator for specific gravity separation of materials comprising:

(a) a continuous loop conveyor having a bed with transverse riffles and substantially vertical side walls, said bed having a substantially flat top segment on which feed material is deposited;

(b) a bar sweeper having a plurality of transverse bars with a sweep segment of the bar sweeper operably disposed over said flat top segment of said bed proximate the transverse riffles for substantially parallel movement with respect to said flat top segment of said bed: and

(c) first drive means for mechanically operating said conveyor and moving said flat top segment of said bed and

said transverse riffles in a first direction and second drive means for mechanically operating said bar sweeper and moving said sweep segment and bars in an interacting second direction opposite the direction of the flat top



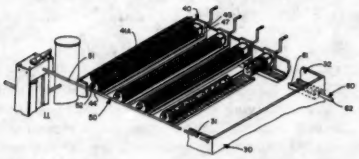
segment of said bed, wherein feed material deposited on said bed is separated into a heavier material transported on said bed in said first direction for discharge and collection, and lighter material transported by said bar sweeper in said second direction for discharge and collection.

4,584,099

SEWAGE SLUDGE FILTERING SYSTEM

R. Edward Burton, 23881 Sherwood Rd., Willits, Calif. 95490

Filed Jan. 2, 1985, Ser. No. 688,340
Int. Cl.[4] B01D *35/08, 35/18*
U.S. Cl. 210—203 9 Claims



1. In a sewage sludge filtering system adapted for filtering a mixture comprising coagulated sludge particles and water exiting from a polymer mixer wherein a liquid polymer is mixed with sludge from a sewage treatment plant, in combination:

a sludge collection arrangement;

a mounting frame disposed in a generally horizontal orientation over said sludge collection arrangement;

a plurality of sludge filter modules mounted on said frame in a generally side-by-side relationship;

a piping system adapted to be coupled to said polymer mixer for communicating said mixture to each of said sludge filter modules and including an individual flow control valve associated with each of said modules; and

a filtrate collection system mounted to said frame for collecting liquid filtrate from said sludge filter modules and adapted to be connected to a return line to the sewage treatment plant;

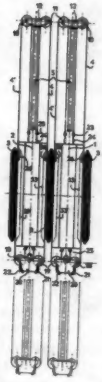
each of said sludge filter modules comprising an elongated mesh hammock arranged to receive a volume of said mixture and constructed and arranged to have one of an open top region or a removable top cover, support means for supporting said hammock on said frame and including means mounting said hammock for rotation about a longitudinal axis to enable said hammock' to be invertred for dumping dewatered sludge particles therefrom, and an elongated filtrate tray mounted to said support means underneath said mesh hammock for rotation with said hammock to be relocated out of the path of dumping sludge particles when said hammock is inverted, each of said elongated filtrate trays having a liquid flow connection to said filtrate collection system.

4,584,100

FILTER PRESS COMPRISING MEANS FOR FILTERING MUD

Pierre Choquenet, and Jean C. Carle, both of Chauny, France, assignors to Societe Choquenet S.A., Chauny, France

Filed Jan. 20, 1984, Ser. No. 572,468
Claims priority, application France, Jan. 20, 1983, 83 00816
Int. Cl.[4] B01D *25/12*
U.S. Cl. 210—225 7 Claims



1. In a filter press of the type comprising two fixed supports, inter-connected by a frame and comprised of at least two parallel rails on which a plurality of separate plates are mounted so that the plates can be pressed against one another during a step of filtration, and can be separated from one another for extraction of a filter cake formed during filtration, and in which at least alternate ones of said plates comprise a filter plate having at least one filter surface, the improvement comprising a plurality of filter cloth support frames, one for each filter plate, each filter cloth support frame being of a length greater than the length of a filter plate and comprising at least two parallel posts, guide means at opposite sides of each filter plate for mounting said posts and frame for longitudinal sliding movement relative to said filter plate, a first roller connected to said support frame at a location beyond one end of the filter plate, a second roller connected to said support frame at a location beyond the other end of said filter plate so that the filter plate is between said first and second rollers, a plurality of separate filter cloths, each filter cloth extending across a filter surface of a filter plate and being mounted on said first and second rollers, first means for connecting a first end of said filter cloth to one end of said filter plate, and second means for connecting a second end of said filter cloth to the other end of said plate, so that said filter cloth rolls around said rollers in response to longitudinal sliding movement of the support frame relative to the filter plate, and control bar means engaging each frame for simultaneously moving said filter from a first position in which the filter cloth extends across the filter surface of a filter plate to perform a filtering step, and a second position in which the filter cloth with filter cake thereon rolls around said second roller to remove filter cake from the filter cloth.

4,584,101
COFFEE PACKAGE

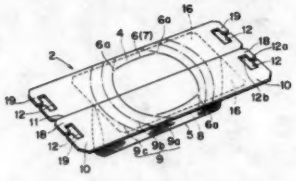
Joji Katsoka, Tokyo, Japan, assignor to Katsoka Bussan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 328,514, Dec. 8, 1981, abandoned. This application Feb. 8, 1984, Ser. No. 577,326

Claims priority, application Japan, Dec. 27, 1980, 55-185091; Mar. 7, 1981, 56-31751; Mar. 24, 1981, 56-40286; Apr. 16, 1981, 56-53789[U]; Apr. 16, 1981, 56-109796[U]; Aug. 12, 1981, 56-118711[U]; Aug. 12, 1981, 56-118712[U]; Aug. 14, 1981, 56-119955[U]; Sep. 3, 1981, 56-130371[U]

Int. Cl.[4] A47J *31/06*

U.S. Cl. 210—474 15 Claims



1. A coffee package comprising a filter assembly composed of an elongated planar plate of material having a longitudinal centerline and a predetermined rigidity and including a paper sheet, said elongated planar plate having a first side and a second side, said elongated planar plate having a plate opening for pouring hot water therethrough in an intermediate portion thereof, and a filter sack containing a predetermined volume of coffee powder therein; said filter snack being composed of a sheet of filter paper folded in two to form first and second flaps, first adhering means for releasably adhering said first and said second flaps together at a predetermined intermediate point which is spaced from the folding point to form a closed sack which is openable at said intermediate point by overcoming said first adhering means and releasing one flap from another to form a passage into the interior of the filter sack, said intermediate point being adjacent to with said plate opening so that said passage coincides with said plate opening and is also aligned with the longitudinal centerline of said planar plate, said flaps being folded back from said predetermined intermediate point into a configuration which positions said flaps essentially coplanar with each other, second adhering means for affixedly adhering the margins of said first and second flaps to said second side of the elongaged planar plate. therealong to surround said plate opening, said elongated planar plate being folded to envelop the filter sack therebetween; and an air-tight wrapper sealing said filter assembly.

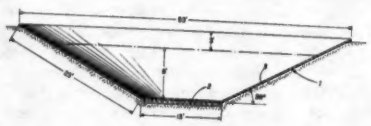
4,584,102
PROCESS FOR THE BIOLOGICAL DEGRADATION OF HAZARDOUS WASTE BY-PRODUCTS

John D. Bogart, P.O. Box 623, Laurel, Miss. 39441, and Charles W. Hawk, P.O. Box 18225, Pensacola, Fla. 32523

Filed Sep. 5, 1985, Ser. No. 772,847

Int. Cl.[4] C02F *11/02*

U.S. Cl. 210—610 4 Claims



1. A method of decontaminating an impoundment in which waste water and sludge are stored, said method comprising the steps of:

constructing a treatment unit by excavating the sludge from a portion of said impoundment, building a separation wall to separate said excavated portion of said impoundment from the remaining portion of said impoundment, grading said excavated portion of said impoundment into a bowl shape, pouring a slab in the base of said bowl-shaped portion, and placing a leak-proof liner in said bowl-shaped portion of said impoundment, the excavated sludge being stored in said remaining portion of said impoundment;

pumping clean water into said treatment unit until said water reaches a predetermined depth;

positioning and operating an aerator at the center of said water in the treatment unit;

adding the sludge in the remaining portion of said impoundment to said treatment unit;

adding a mixture of mutant bacteria, nutrients, and emulsifiers to said treatment unit;

adjusting the pH of the mixture in said treatment unit to between about 7 and 7.5; and

obtaining and analyzing samples from said treatment unit at regular intervals until said waste-water and sludge are substantially free of detectable hazardous constituents.

4,584,103
REVERSE OSMOSIS OF ULTRAFILTRATION MODIFIED POLYACRYLONITRILE-CONTAINING MEMBRANE

Charles Linder, Rehovot, and Mordechai Perry, Petach Tikvah, both of Israel, assignors to Aligena AG, Basel, Switzerland

Continuation of Ser. No. 189,978, Sep. 18, 1980, abandoned. This application Nov. 30, 1982, Ser. No. 445,529

Claims priority, application Switzerland, Sep. 19, 1979, 8461/79

Int. Cl.[4] B01D *13/00, 13/04*

U.S. Cl. 210—650 18 Claims

1. A porous, modified polyacrylonitrile-containing semipermeable membrane having a structure suitable for ultra-filtration and reverse osmosis, which comprises a membrane of a polymer selected from the group consisting of polyacrylonitrile and copolymers of acrylonitrile and other ethylenically unsaturated monomers, said membrane having a surface which has pores with a diameter of 10 to 1000 Å before modification and being modified through a sequence of chemical reactions consisting essentially of steps (a) to (d), wherein:

step (a) is reacting said polymer with hydroxylamine, to form amidoxime groups;

step (b) is reacting the amidoxime groups obtained according to step (a) with an organic compound which contains at least two functional groups, at least one of which is capable of reacting with amidoxime groups, to bond one of the functional groups of the organic compound to the amidoxime groups, said organic compound being selected from the group consisting of

compounds containing multiple bonds,

compounds containing as reactive groups epoxide, aziridine, aldehyde, imidate, isocyanate, isothiocyanate, hydroxyl, anhydride, acyl halide or N-methylol groups, said reactive groups being substituted or unsubstituted,

compounds containing substituents detachable as tertiary amines, and

compounds containing substituents detachable as anions;

optional step (c) is reacting a polymer obtained according to step (b) with at least one polyfunctional, linear or branched oligomer or polymer having a plurality of functional groups, to bond an available functional group of the organic compound to one of the functional groups of the oligomer or polymer; and

step (d) is reacting a polymer obtained according to step (b) or optional step (c) with a compound containing at least one ionizable group and at least one group capable of reaction with the polymer obtained according to step (b) or optional step (c), provided that a polymer obtained according to step (c) does not already possess sufficient ionic groups, to bond said compound containing said at

least one ionizable group to the polymer obtained according to step (b) or optional step (c).

16. A process for concentrating a solution with a solute which comprises disposing on one side of a semipermeable membrane according to claim 1 a solution with a solute, said solution having an osmotic pressure, and applying a hydraulic pressure against said solution and said membrane, said pressure being greater than the osmotic pressure of said solution.

4,584,104

SILICA INHIBITION: PREVENTION OF SILICA DEPOSITION BY BORIC ACID/ORTHORBORATE ION

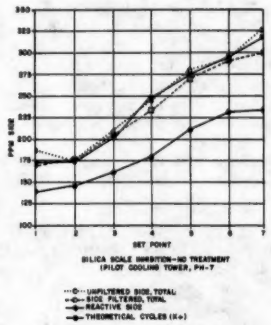
Leonard Dubin, Skokie, Ill., assignor to Nalco Chemical Company, Oakbrook, Ill.

Filed Jun. 29, 1984, Ser. No. 626,348

The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.

Int. Cl.[4] C02F 5/08

U.S. Cl. 210—696 8 Claims



1. A method of inhibiting amorphous silica scale formation on surfaces in contact with industrial waters containing dissolved silicates which comprises, at a pH of at least 5.0, treating said waters with an effective amount for the purpose of inhibiting amorphous silica scale, of a boron compound which forms orthoborate ion when dissolved in or hydrolyzed by said waters.

4,584,105

SCALE INHIBITORS FOR PREVENTING OR REDUCING CALCIUM PHOSPHATE AND OTHER SCALES

Dodd W. Fong, Naperville, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 4, 1985, Ser. No. 707,921

Int. Cl.[4] C02F 5/12

U.S. Cl. 210—701 2 Claims

1. A method of inhibiting calcium phosphate scales in boilers and industrial cooling systems which comprises treating the water present in these systems with an effective amount of meth-acryloyl morpholine and acryloyl morpholine copolymers which comprises 5–95 mole percent of meth-acryloyl morpholine and 95–5 mole percent of carboxylic acid containing vinyl monomer comprising acrylic acid, methacrylic acid, maleic acid, crotonic acid, and itaconic acid and which polymer has a molecular weight within the range of 1,000–150,000 to inhibit said calcium phosphate scales.

4,584,106

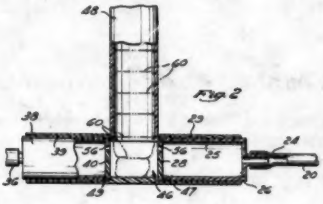
CHLORINATOR AND METHOD

Wayne L. Held, 28011 Paseo Barranca, San Juan Capistrano, Calif. 92675

Filed Aug. 13, 1984, Ser. No. 639,718

Int. Cl.[4] C02F 1/76

U.S. Cl. 210—754 11 Claims



1. A chlorination dispensing system for connection to inlet and outlet pipes of a pump for circulating water through a hot tub, pool or the like, comprising:

a dispenser body including a mixing chamber therein, the mixing chamber having an inlet and an outlet;

flow control means for controlling fluid flow through the mixing chamber including an inlet venturi chamber and an outlet venturi chamber, the mixing chamber being positioned between the inlet and outlet venturi chambers within the dispensing body, an inlet venturi mounted in the inlet venturi chamber and an outlet venturi mounted in the outlet venturi chamber;

a chlorinator tube having one end in fluid communication with the mixing chamber, the chlorinator tube being formed to hold chlorine-containing tablets such that water in the mixing chamber dissolves the tablets to form a chlorine solution;

means for diverting a portion of pressurized water from the pump outlet pipe to the mixing chamber inlet such that all of the diverted water passes through the mixing chamber to dissolve the tablets;

a first baffle mounted in the mixing chamber outlet, the first baffle having a plurality of angularly spaced orifices therein;

a second baffle mounted in the mixing chamber inlet, the second baffle having a plurality of angularly spaced orifices therein; the first and second baffles being positioned such that the orifices regulate the water depth in the mixing chamber; and

means for introducing chlorinated water from the mixing chamber outlet into the pump inlet pipe.

7. A method for dispensing chlorine to an outlet pipe of a pump for circulating water through a hot tub, pool or the like, comprising:

forming a dispenser body including a mixing chamber therein with an inlet and an outlet:

forming a flow control means for controlling fluid flow through the mixing chamber including an inlet venturi chamber and an outlet venturi chamber, the mixing chamber being positioned between the inlet and outlet venturi chambers within the dispensing body; an inlet venturi mounted in the inlet venturi chamber, and an outlet venturi mounted in the outlet venturi chamber connecting a chlorinator tube to have one end in fluid communication with the mixing chamber such that water in the mixing chamber dissolves chlorine-containing tablets in the chlorinator tube to form a chlorine solution;

diverting a portion of pressurized water from the pump outlet to the mixing chamber inlet such that all of the diverted water passes through the mixing chamber to dissolve the tablets;

controlling fluid flow through the mixing chamber using said flow control means and by mounting a first baffle in

the mixing chamber outlet and a second baffle in the mixing chamber inlet:

forming the baffles to each have a plurality of angularly spaced orifices therein for regulating the rate of water flow through the mixing chamber and for regulating the water depth in the mixing chamber; and

introducing chlorinated water from the mixing chamber outlet into the pump inlet pipe.

4,584,107

METHOD OF TREATING EFFLUENTS CONTAINING SULFUR OXIDES

Takeo Odaka, and Hiroichi Miyashita, both of Niihama, Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Mar. 21, 1985, Ser. No. 714,259
Int. Cl.[4] C02F *1/28;* C01B *17/00*
U.S. Cl. 210—760 6 Claims

1. A method of treating an effluent containing sulfur oxide ions so that it will be provided with a basic pH that will be maintained over a long period of time, said method comprising the steps of

(a) blowing into said effluent a sufficient amount of a mixture of air and ozone that the COD level of said effluent will be reduced to 6 mg/l or below, and

(b) adding an alkali to said effluent obtained in step (a) to provide it with a basic pH.

4,584,108

DISPERSIBLE ALPHA ALUMINA MONOHYDRATE HAVING INCREASED VISCOSIFYING PROPERTIES

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 21, 1983, Ser. No. 563,776
Int. Cl.[4] C09K *7/04;* C01F *7/02*
U.S. Cl. 252—8.5 B 18 Claims

1. In the method of making uncrystallized AlO(OH) gel for use in a drilling fluid by reacting an acid and a base, at least one of which contains an aluminum salt, to form a reaction product slurry comprising uncrystallized AlO(OH) and a by-product salt, the improvement comprising treating the reaction product to reduce the amount of by-product salt by filtering the reaction product slurry and water-washing the recovered filter cake so as to increase the viscosifying power of the AlO(OH) when dispersed in water as measured by a higher K in the power law model.

4,584,109

METHOD OF CONTROLLING THE MOBILITY OF FLOWS THROUGH FISSURES, SLITS OR PORES

Raimund Haas, Frankfurt am Main; Dieter Ohlendorf, Liederbach, and Werner Interthal, Rüsselsheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 29, 1984, Ser. No. 584,648
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307252
Int. Cl.[4] C09K *3/00;* E21B *43/16*
U.S. Cl. 252—8.55 D 8 Claims

1. A method of controlling the mobility of an aqueous flow through fissures, slits or pores, which comprises adding to the aqueous medium an aqueous solution conprising a dissolved cationic surfactant which, on measurement of the electric birefringence with a pulsed, rectangular electrical field in a pure aqueous solution gives a measurement signal, from the decrease of which a relaxation time of 0.01 μs to 10 ms, in particular of 0.1 μs—2 ms, results.

4,584,110

SIZE COMPOSITIONS FOR GLASS FIBERS

Gerald E. Rammel, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 11, 1984, Ser. No. 619,235
Int. Cl.[4] D06M *00/00*
U.S. Cl. 252—8.8 8 Claims

1. A glass fiber aqueous size composition consisting essentially of, by weight percent:

0.1–0.5 amine stearate

0.75–2.0 polyvinyl alcohol

1.0–4.0 phosphate ester

1.5–6.0 a fatty acid ester lubricant

1.5–5.0 ethoxylated fatty acid amine condensate antistatic agent

balance: water to make 100% of the composition.

4,584,111

USE OF VINYL ADDITION COPOLYMERS TO IMPROVE QUALITY OF LUBRICATING OIL ADDITIVES

Terry L. Collett, Voorhees; Gerald Shaw, Plainfield, and Terence F. Finch, Voorhees, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 28, 1984, Ser. No. 687,091
Int. Cl.[4] C10M *105/08*
U.S. Cl. 252—32.7 E 11 Claims

1. A process for the production of an oil solution of an oil-soluble lubricating additive comprising the step of introducting at least a flocculating amount based on the weight of the total insolubles into the hydrocarbon oil reaction system prior to mechanical clarification of a water-in-oil emulsion of a water-soluble vinyl addition macromolecular polymer into said system containing at least 0.1% water.

4,584,112

FUEL-EFFICIENT LUBRICATING OIL

Timothy R. Erdman, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 357,038, Mar. 11, 1982, abandoned, which is a continuation of Ser. No. 206,516, Nov. 13, 1980, abandoned, which is a continuation of Ser. No. 968,528, Dec. 11, 1978, abandoned. This application Jun. 19, 1985, Ser. No. 747,080
Int. Cl.[4] C10M *125/22, 125/24, 129/74*
U.S. Cl. 252—32.7 E 4 Claims

1. A method of improving the fuel economy of an internal combustion engine comprising lubricating the crankcase of said engine with a lubricating composition consisting of a hydrocarbon oil of lubricating viscosity and from 15 to 25 millimols per kilogram of zinc O,O-di(2-ethylhexyl)phosphorodithioate and from 0.25 to 2 weight percent of pentaerythritol monooleate.

4,584,113

SULFURIZED COMPOSITIONS AND LUBRICANTS CONTAINING THEM

Reed H. Walsh, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Oct. 25, 1984, Ser. No. 664,465
Int. Cl.[4] C07C *161/00;* C10M *1/38*
U.S. Cl. 252—45 29 Claims

1. A sulfurized composition prepared by the process which comprises sulfurizing a mixture comprising

(A) at least one terpene compound, and

(B) at least one other olefinic compound of the formula:

$$R^1R^2C{=}CR^3R^4$$

wherein R^1, R^2, R^3 and R^4 are, independently, hydrogen or an organic group and the olefinic double bond is a non-aromatic double bond; wherein (A) and (B) are sulfu-

rized in the presence of sulfur, sulfur halide, or a mixture of sulfur or sulfur dioxide and hydrogen sulfide; and wherein the equivalent ratio of the mixture of (A) to (B) is from about 1:20 to about 10:1.

4,584,114

MULTIFUNCTIONAL LUBRICANT ADDITIVES AND COMPOSITIONS THEREOF

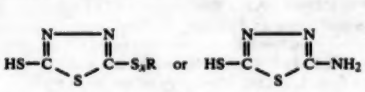
Robert M. Gemmill, Pitman; Andrew G. Horodysky, Cherry Hill, and Phillip S. Landis, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 218,146, Dec. 19, 1980, abandoned. This application Dec. 20, 1982, Ser. No. 450,933

Int. Cl.⁴ C10M *133/00, 135/00*

U.S. Cl. 252—47.5 **8 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor proportion sufficient to impart friction reducing and anti-corrosion properties to said composition of an adduct of an unsaturated ester selected from the group consisting of jojoba oil, oleyl oleate, and pentaerythritol tetraoleate and a mercaptothiadiazole, in a molar ratio of ester to mercaptothiadiazole of from about 10:1 to about 1:2 and at a temperature of from about 160° C. to about 200° C. wherein said mercaptothiadiazole has the general formulas:



where x is 1 to 3, R is H or is alkyl, alkenyl, aralkyl or alkaryl of from 1 to about 50 carbon atoms.

4,584,115

METHOD OF PREPARING BORON-CONTAINING COMPOSITIONS USEFUL AS LUBRICANT ADDITIVES

Kirk E. Davis, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 347,762, Feb. 11, 1982, abandoned, which is a continuation-in-part of Ser. No. 267,239, May 26, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,894

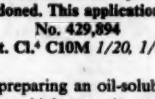
Int. Cl.⁴ C10M *1/20, 1/54*

U.S. Cl. 252—49.6 **20 Claims**

1. A method for preparing an oil-soluble boron-containing composition of matter which comprises reacting, at a temperature from about 80° C. to about 250° C.

(A) at least one of boric acid or boron trioxide with

(B) at least one epoxide having the formula



wherein each of R^1, R^2, R^3 and R^4 is hydrogen or an aliphatic radical, or any two thereof together with the epoxy carbon atom or atoms to which they are attached, form a cyclic radical, said epoxide containing at least 8 carbon atoms,

wherein the molar ratio of reagents A and B is between about 1:0.25 and about 1:4, in the presence of a minor amount of a heel of a previously obtained oil-soluble boron-containing composition prepared by reagents A and B in a molar ratio of between about 1:0.25 and about 1:4.

4,584,116

LUBRICANT COMPOSITIONS CONTAINING CALCIUM AND BARIUM FLUORIDES

Marc Hermant, Cormeilles en Parisis; Dominique Basset, Poissy, and Jean-Claude Razet, Levallois Perret, all of France, assignors to Atochem, France

Filed Aug. 2, 1984, Ser. No. 637,039

Claims priority, application France, Aug. 31, 1984, 8313953

Int. Cl.⁴ C10M *125/18, 133/06*

U.S. Cl. 252—51 **4 Claims**

1. A lubricant composition consisting essentially of a lubricating oil having dispersed therein a mixture of calcium fluoride and barium fluoride having a particle size below about 0.5 micron; said mixture containing for each 100 parts by weight thereof 60 to 35 parts calcium fluoride and, correspondingly, 40 to 65 parts barium fluoride.

4,584,117

DISPERSANT ADDITIVES FOR LUBRICATING OILS AND FUELS

Robert H. Wollenberg, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 22, 1984, Ser. No. 643,217

Int. Cl.⁴ C10M *133/16*

U.S. Cl. 252—51.5 A **11 Claims**

1. A product prepared by the process which comprises (a) first reacting a polyamine with a cyclic carbonate at a temperature sufficient to cause reaction wherein the molar charge of said cyclic carbonate to the basic amine nitrogen of said polyamine is from about 0.1:1 to about 10:1; (b) contacting at a temperature sufficient to cause reaction the product of (a) above with an alkenyl or alkyl succinic anhydride wherein the molar charge of said alkenyl or alkyl succinic anhydride to said product of (a) above is from about 0.5:1 to about 5:1.

4,584,118

METAL TRITHIOCARBONATES AS DEPRESSANTS

Robert M. Parlman, Bartlesville, Okla.; Tommy L. Young, Tucson, Ariz., and Clarence R. Bresson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 436,883, Oct. 26, 1982, Pat. No. 4,510,050. This application Jan. 14, 1985, Ser. No. 691,608

Int. Cl.⁴ C09K *3/00*

U.S. Cl. 252—61 **2 Claims**

1. Depressant composition comprising

(a) a trithiocarbonate selected from the group consisting of M_2CS_3 and $M'CS_3$ wherein the components M which can be the same or different are selected from the group consisting of NH_4 and alkali metals and M' is an alkaline earth metal, and

(b) A composition selected from the group consisting of MSH, $M'(SH)_2$ and M'S, wherein M and M' have the same meaning as under (a).

4,584,119

NAPHTHALENE DICARBOXYLIC ACID SALTS AS CORROSION INHIBITORS

Roger G. Duranleau, Georgetown; Carol A. Triebel, Austin, and Clifford L. Lambert, Georgetown, all of Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed Apr. 19, 1985, Ser. No. 725,045

Int. Cl.⁴ C09K *5/00;* **C23F** *11/10*

U.S. Cl. 252—75 **14 Claims**

1. A corrosion inhibited antifreeze composition comprising a water-soluble liquid alcohol freezing point depressant and an effective amount of an inhibitor comprising:

a dibasic acid salt selected from the group consisting of the alkali metal salts of 2,6-naphthalene dicarboxylic acid; 1,5-naphthalene dicarboxylic acid and mixtures thereof.

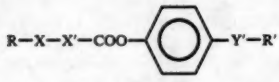
4,584,120

LIQUID CRYSTAL COMPOUND AND LIQUID CRYSTAL COMPOSITION

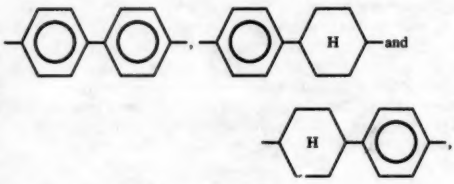
Tsunenori Fujii; Kenji Suzuki, both of Souka; Masahiro Yoshida, Kita-Katsushika; Hisashi Okawa, Kasukabe; Kaoru Koto; Hideki Ohmori, both of Souka; Hisao Yokokura, Hitachi; Yoshiaki Okabe, Hitachi; Shintaroo Hattori, Hitachi; Teruo Kitamura, Katsuta; Akio Mukoh, Mito, and Mikio Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 465,617, Feb. 10, 1983, abandoned.
This application May 15, 1984, Ser. No. 610,439
Claims priority, application Japan, Feb. 15, 1982, 57-21083
Int. Cl.[4] G02F *1/13;* C09K *3/34;* C07C *69/75, 69/753, 69/773*
U.S. Cl. 252—299.63 13 Claims

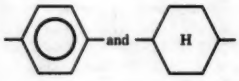
1. A liquid crystal compound characterized by having the general formula:



wherein R and R′ each represent an alkyl group, —X—X′— is selected from the group consisting of



and Y′ is selected from the group consisting of



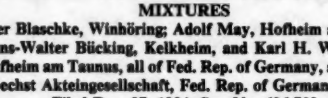
4,584,121

AMPHOTERIC COMPOUNDS, MIXTURES CONTAINING THESE COMPOUNDS FOR DISINFECTANT CLEANING, AND PROCESSES FOR THE PREPARATION OF THESE COMPOUNDS AND MIXTURES

Günter Blaschke, Winhöring; Adolf May, Hofheim am Taunus; Hans-Walter Bücking, Kelkheim, and Karl H. Wallhäusser, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Akteingesellschaft, Fed. Rep. of Germany

Filed Dec. 27, 1984, Ser. No. 686,729
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1983, 3347534
Int. Cl.[4] C11D *1/10, 1/84, 3/48*
U.S. Cl. 252—106 12 Claims

1. Amphoteric compounds of the formula



(I)

in which

R^1 is an alkyl or alkenyl radical having 8 to 22 carbon atoms;
A is the anion of a mineral or carboxylic acid;
a and b, independently of one another, are the numerical values 2 or 3;
c is a numerical value and is 1 or 2; and
x is a numerical value which is zero or an integer ranging from 1 to 3.

4,584,122

AZEOTROPE-LIKE COMPOSITIONS OF TRICHLOROTRIFLUOROETHANE, ETHANOL, NITROMETHANE AND 2-METHYLPENTANE OR A MIXTURE OF HEXANES

Rajat S. Basu, Williamsville; Earl A. E. Lund, West Seneca; Hang T. Pham, North Tonawanda; David P. Wilson, and Hillel Magid, both of Williamsville, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 28, 1984, Ser. No. 675,681
Int. Cl.[4] C11D *7/50;* C23G *5/036*
U.S. Cl. 252—171 13 Claims

1. Azeotrope-like compositions comprising trichlorotrifluoroethane, ethanol, nitromethane, and a hexane which is 2-methylpentane or a mixture of hexanes containing at least about 6.5 weight percent of at least two hexane isomers based on the total hexane content of the azeotrope-like composition.

4,584,123

PROCESS FOR UPGRADING HYDROGEN CHLORIDE CONTAINING CHLORINE, IRON-III-CHLORIDE, ETHYLENE AND/OR ACETYLENE

Ludwig Schmidhammer, Haiming; Gerhard Dummer, Burgkirchen; Klaus Haselwarter, and Rudolf Strasser, both of Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 24, 1984, Ser. No. 633,965
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1983, 3336816
Int. Cl.[4] C09K *3/00;* C07C *17/156*
U.S. Cl. 252—188.31 2 Claims

1. A method for making a composition for use in the oxychlorination of ethylene, comprising the steps of:
(a) combining hydrogen chloride containing small amounts of chlorine and of iron III chloride with a member selected from the group consisting of (i) hydrogen chloride containing acetylene or ethylene or mixtures thereof, (ii) ethylene and (iii) mixtures thereof;
(b) then adding water in the vapor state in an amount of 5 to 20 mole % relative to the total amount of hydrogen chloride, at a temperature of between 120° C. and 180° C. within a time period of maximally 0.9 seconds after step (a).

4,584,124

STABLE THICKENER DISPERSIONS WHICH ACT AS CARRIERS

Sienling Ong, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

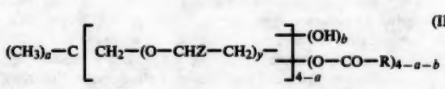
Filed Jul. 10, 1984, Ser. No. 629,367
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1983, 3325083
Int. Cl.[4] B01J *13/00;* C09B *67/10, 67/40*
U.S. Cl. 252—308 3 Claims

1. A stable ready-to-use thickener dispersion which acts as a carrier, for the manufacture of aqueous formulations suitable for printing water-insoluble, hot-fixable disperse dyestuffs onto a textile hydrophobic fiber material, which comprises a combination having as the ingredients:
(a) a synthetic thickener based on a high molecular weight carboxylic polymer or copolymer;
(b) a natural thickener capable of being readily dissolved in water at room temperature, based on an alginate or Guar bean flour, starch or cellulose derivative;
(c) a high-boiling hydrophobic solvent based on an alkyloxypropylate having the formula (I)

$$C_nH_{2n+2-m}[O(CH_2-CH(CH_3)O)_{x/m}-H]_m \quad (I)$$

in which formula n denotes an integer from 2 to 6, m denotes an integer from 1 to 6 and x denotes a number from 20 to 60, with the proviso that m is less than or equal to n, and with the proviso that said solvents of formula (I) or the mixtures thereof remain liquid between −5° C. and +220° C., have a viscosity between 20 and 240 cST at 50° C. and also have a density between 0.981 and 1.000 at 20° C; and

(d) a viscosity-regulating emulsifier based on an polyglycol ester having the formula (II)



(II)

in which R is an open-chain aliphatic radical having 9 to 19 carbon atoms, Z represents hydrogen and methyl, in the ratio of H:CH_3 of 2:1 to 4:1, a is zero or 1, b is 1 to 1.5, and (4-a).y is 150 to 300, wherein the thickener dispersion comprises- per total weight of the combination —from >0 up to 25% of the synthetic thickener (a); from >0 up to 25% of the natural thickener (b); from 35 to 75% of the solvent (c); and—per kilogram of the dispersion—from 10 to 100 g of the emulsifer (d).

4,584,125

ANTIFOAM COMPOSITIONS

Roy M. Griswold, Hudson, and Eugene R. Martin, Onsted, both of Mich., assignors to SWS Silicones Corporation, Adrian, Mich.

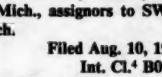
Filed Aug. 10, 1984, Ser. No. 639,555

Int. Cl.[4] B01D *17/00, 19/04*

U.S. Cl. 252—358 **16 Claims**

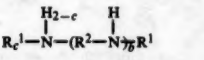
1. A foam destabilizing composition comprising (A) a foam destabilizing agent consisting essentially of

(1) a diorganopolysiloxane having terminal groups selected from the class consisting of hydroxyl, hydrocarbonoxy and triorganosiloxy groups and having the average formula



and

(2) an amine containing compound selected from the group consisting of an aminofunctional organopolysiloxane having a viscosity of from 5 to 100,000 mPa.s at 25° C., an organic amine of the formula



and mixtures thereof, where R is a monovalent hydrocarbon radical having from 1 to 50 carbon atoms, in which an average of at least one R group of the diorganopolysiloxane has from 6 to 50 carbon atoms and the remaining R groups have from 1 to 5 carbon atoms, in which the ratio of R groups radical having from 1 to 5 carbon atoms to R groups having from 6 to 50 carbon atoms range from 1:2.5 to 5600:1, R^1 is a monovalent hydrocarbon radical having from 1 to 25 carbon atoms, R^2 is a divalent hydrocarbon radical having from 1 to 10 carbon atoms per molecule, with the proviso that at least one of the radicals represented by R^1 or R^2 must have at least 6 carbon atoms, a has an average value of from about 1.8 to 2.2, b is 0, 1 or 2, c is 0 or 1, and m has an average value greater than 3, in which the diorganopolysiloxane (1) is present in the destabilizing agent in an amount of from 4 to 96 percent by weight and the amine containing compound (2) is present in the destabilizing agent in an amount of from 96 to 4 percent by weight based on the weight of the destabilizing agent; (B) a nonaqueous dispersing agent; and (C) an inorganic filler.

4,584,126

TRANSLUCENT SOAPS AND PROCESSES FOR MANUFACTURE THEREOF

David P. Joshi, Plainfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 414,443, Sep. 2, 1982, Pat. No. 4,493,786. This application Nov. 13, 1984, Ser. No. 670,690

The portion of the term of this patent subsequent to Jan. 15, 2002, has been disclaimed.

Int. Cl.[4] C11D *9/48, 13/08, 9/50, 13/14*

U.S. Cl. 252—368 **32 Claims**

1. A translucent soap cake which comprises about 45 to 90% of mixed tallow and coconut oil soaps which are soaps of a base selected from the group consisting of lower alkanolamine and alkali metal hydroxide, and mixtures thereof, with from about 40 to 90% of the soap being a tallow soap and about 60 to 10% of the soap being a coconut oil soap, about 1 to 10% of a lanolin soap of a base selected from the group consisting of lower alkanolamine, alkali metal hydroxide, ammonium hydroxide, and mixtures thereof, or lanolin fatty acids or a mixture of such lanolin soap(s) and lanolin fatty acids, about 2 to 12% of a polyol of 3 to 6 carbon atoms and 2 to 6 hydroxyl groups and about 5 to 25% of water.

4,584,127

UTILIZATION OF 1-CYCLOPENTENYLACETIC ACID AS PERFUMING INGREDIENT

Arnoldus Uijttewaal, Geneva, and Dietrich Kastner, Givrins, both of Switzerland, assignors to Firmenich SA, Switzerland

Filed Jan. 12, 1984, Ser. No. 570,177

Claims priority, application Switzerland, Jan. 26, 1983, 419/83

Int. Cl.[4] A61K *7/46*

U.S. Cl. 252—522 R **3 Claims**

1. A method to enhance, improve or modify the odorous properties of perfumes, perfume bases and consumable materials which comprises adding therein an odor modifying amount of 1-cyclopentenylacetic acid of formula

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4,584,128

MIXTURE OF ONE OR MORE T-MERCAPTO TERPENE ISOMERS AND α-TERPINEOL ORGANOLEPTIC USES THEREOF

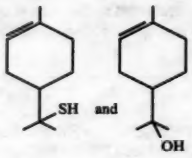
Braja D. Mookherjee, Holmdel, N.J.; Bernard J. Chant, Rye, N.Y.; William J. Evers, Locust, N.J.; Richard A. Wilson, Westfield, N.J.; Michael J. Zampino, North Bergen, N.J., and Manfred H. Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 519,371, Aug. 1, 1983, Pat. No. 4,536,583. This application Aug. 24, 1984, Ser. No. 644,117

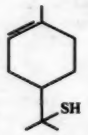
Int. Cl.[4] A61K *7/46*

U.S. Cl. 252—522 R **2 Claims**

1. A process for preparing a composition of matter including as a major proportion, a mixture of compounds having the structures:



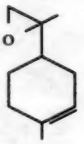
with the mole ratio range of compound having the structure:



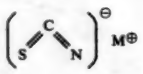
to compound having the structure:

being from 0.8 up to 0.9:0.1 up to 0.2, comprising the steps of:

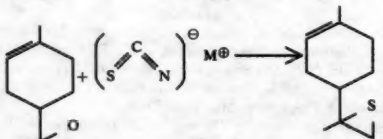
(i) reacting the compound having the structure:



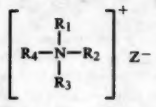
with an alkali metal thiocyanate having the structure:



according to the reaction:

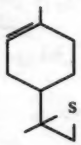


wherein M represents alkali metal in the presence of a phase transfer catalyst, said phase transfer catalyst having the general formula:

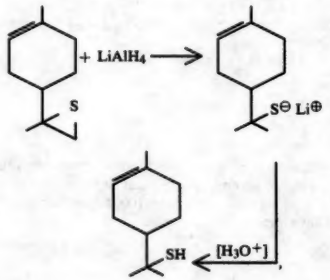


wherein at least one of R_1, R_2, R_3 and R_4 is C_6–C_{14} aryl, C_6–C_{10} aralkyl, C_6–C_{20} alkyl, C_6–C_{14} alkaryl and C_6–C_{20} alkenyl and the other of R_2, R_3 and R_4 is alkyl selected from the group consisting of methyl, ethyl, n-propyl, i-propyl, 1-butyl, 2-butyl, 1-methyl-2-propyl, 1-pentyl and 1-octyl and Z^- is an anion selected from the group consisting of chloride, bromide and hydroxide, the reaction temperature varying from about 45° C. up to about 85° C.; the pressure of reaction varying from one atmosphere up to 10 atmospheres; the mole ratio of alkali metal thiocyanate; epoxide varying from about 8:1 down to about 1:1; the said alkali metal thiocyanate being dissolved in water with the alkali metal thiocyanate being in a concentration of between 10% and 50% in said water;

(ii) reacting the resulting product containing a major proportion of the compound defined according to the structure:



with lithium aluminum hydride to form a lithium salt and then hydrolyzing said lithium salt with mineral acid according to the reaction sequence:



the reaction taking place at a temperature in the range of 25°–36° C. in the presence of a tetrahydrofuran solvent; and

(iii) recovering the resulting reaction product by fractional distillation at a vapor temperature in the range of 45°–58° C. and a pressure of 0.33–0.35 mm/Hg.

4,584,129

ELECTRIC INSULATING OILS

Takao Katayama, Ichihara, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Jun. 11, 1985, Ser. No. 743,585

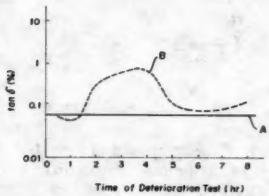
Claims priority, application Japan, Jun. 18, 1984, 59-123836

Int. Cl.[4] H01B 3/22

U.S. Cl. 252—570 **5 Claims**

1. An electric insulating oil consisting essentially of a mineral

oil having a boiling point of 200° C. or higher, a viscosity of from 2 to 500 cst (at 40° C.), a pour point of −35° C. or below,



a sulfur content of 5 ppm or less and an aromatic hydrocarbon content (% C_A) of 5% or less.

4,584,130

INTRAMOLECULARLY CROSS-LINKED HEMOGLOBIN AND METHOD OF PREPARATION

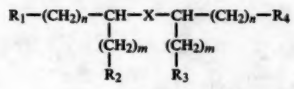
Enrico Bucci; Clara Fronticelli-Bucci, both of Baltimore, and Ramachandra Hosmane, Columbia, all of Md., assignors to University of Maryland, Baltimore, Md.

Filed Mar. 29, 1985, Ser. No. 717,783

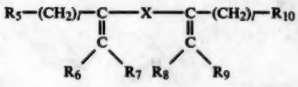
Int. Cl.[4] **C07C** *103/52;* **A61K** *35/18, 37/02;* **C07K** *13/00*

U.S. Cl. 260—112 B **42 Claims**

1. Cross-linked stroma-free hemoglobin obtained by cross-linking stroma-free hemoglobin with at least one cross-linking reagent selected from the group consisting of compounds of the general formulae (I) and (II):



(I)



(II)

wherein one of R_1 or R_2 represents an electron-withdrawing atom or group, and the other of R_1 or R_2 represents a leaving atom or group or an electron-withdrawing group containing a leaving atom or group; one of R_3 or R_4 represents an electron-withdrawing atom or group, and the other of R_3 or R_4 represents a leaving atom or group or an electron-withdrawing group containing a leaving atom or group; R_5 and R_{10}, which may be the same or different, each represents an electron-withdrawing atom or group or an electron-withdrawing group containing a leaving atom or group; one of R_6 or R_7 represents a hydrogen atom, an alkyl group, an aryl group, or a heterocyclic group, and the other of R_6 or R_7 represents a leaving atom or group; one of R_8 or R_9 represents a hydrogen atom, an alkyl group, an aryl group or a heterocylic group, and the other of R_8 or R_9 represents a leaving atom or group; X represents a linking atom or group, n=0 to 4, m=0 to 4 and l=0 to 4.

4,584,131

BENZOTHIAZEPINE DERIVATIVES

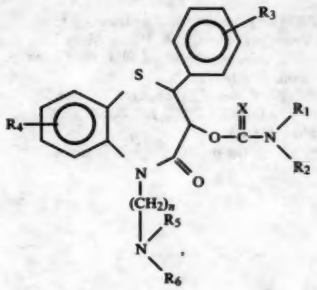
David Floyd, Pennington, and John Krapcho, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 20, 1985, Ser. No. 746,904

Int. Cl.[4] **C07D** *281/10;* **A61K** *31/55*

U.S. Cl. 260—239.3 B **21 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof wherein

n is 2 or 3;

X is oxygen or sulfur;

R_1 and R_2 are each independently hydrogen alkyl, cycloalkyl, or allyl, or R_1 and R_2 together with the nitrogen atom to which they are attached are pyrrolidinyl, piperidinyl or morpholinyl;

R_3 is alkyl, alkoxy, halogen, trifluoromethyl, or nitro; and

R_4 is hydrogen, halogen, or trifluoromethyl, or nitro; and

R_5 and R_6 are each independently alkyl or cycloalkyl or R_5 and R_6 together with the nitrogen atom to which they are attached are pyrrolidinyl, piperidinyl, or morpholinyl.

4,584,132

1-(N-PHOSPHINYLCARBAMOYL) β-LACTAM ANTIBACTERIAL AGENTS

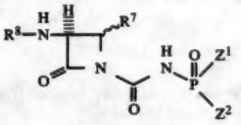
Harry A. Albrecht, Towaco; Frederick M. Konzelmann, West Paterson, and Dennis D. Keith, Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 9, 1983, Ser. No. 521,519

Int. Cl.[4] **C07F** *9/65;* **A61K** *31/675*

U.S. Cl. 260—239 A **27 Claims**

1. A compound of the formula



wherein,

Z^1 is a group —OR^1, —NR^3R^4, or —SR^5,

Z^2 is a group —OR^2, —NR^3R^4, or —SR^6;

R^1 and R^2 may be either the same or different and each is hydrogen, lower alkyl, aryl, thienyl, furyl, pyrrolyl, pyrazinyl, thiazolyl, pyrimidinyl or tetrazolyl;

R^3 and R^4 may be either the same or different and each is hydrogen, lower alkyl, aralkyl, aryl, thienyl, furyl, pyrrolyl, pyrazinyl, thiazolyl, pyrimidinyl or tetrazolyl;

R^5 and R^6 may be either the same or different and each is hydrogen, lower alkyl, aralkyl, aryl, thienyl, furyl, pyrrolyl, pyrazinyl, thiazolyl, pyrimidinyl or tetrazolyl;

R^7 is hydrogen, lower alkyl, or lower alkoxycarbonyl;

R^8 is acyl; and

pharmaceutically acceptable salts thereof.

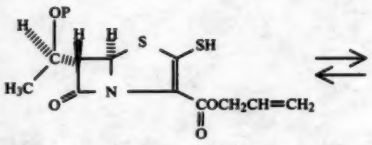
4,584,133

PROCESS FOR THE PRODUCTION OF PENEMS

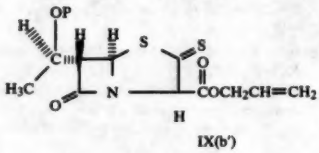
Vlyyoor M. Girijavallabhan, Parsippany; Ashit K. Ganguly, Upper Montclair; Patrick A. Pinto, Mine Hill, and Richard W. Versace, Ringwood, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Nov. 7, 1983, Ser. No. 549,535
Int. Cl.[4] C07D 205/08, 487/04
U.S. Cl. 260—245.2 R 1 Claim

1. A process for the production of a compound of the formulas



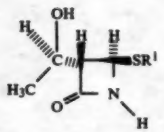
IX(a')



IX(b')

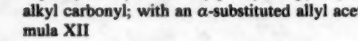
wherein P is a removable hydroxy protecting group or hydrogen; which comprises

(a) reaction in the presence of an acid acceptor of an azetidinone of the formula



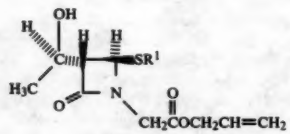
II(a)

wherein R^1 is a sulfur protecting group selected from triphenylmethyl, dimethylphenyl, 2-pyranyl, or lower alkyl carbonyl; with an α-substituted allyl acetate of formula XII



XII

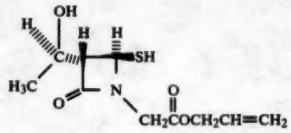
wherein W is a leaving group selected from tosyl, mesyl, chloro, bromo, iodo or trifluoromethansulfonyl; to form the intermediate of the formula XIII



XIII

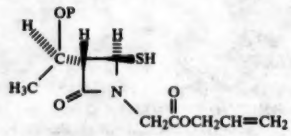
wherein R^1 is as hereinabove defined;

(b) treatment of the compound of formula XIII with a stoichiometric excess of elemental zinc in a strong acid to deprotect the sulfur and form the compound of formula XIV



XIV

(c) treatment of the compound of formula XIV with a removable hydroxy protecting group to form the compound of formula XIV(a)



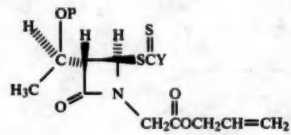
XIV(a)

wherein P is a removable hydroxy protecting group;

(d) reaction of the compound of formula XIV or XIV(a) with a thiocarbonyl compound of formula VII

VII

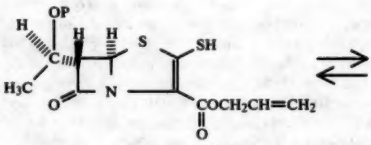
wherein Y is a leaving group selected from chloro, bromo, iodo, imidazolyl or aryloxy, to form a compound of formula XV



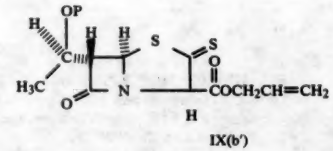
XV

wherein Y is as hereinabove defined and P is a removable hydroxy protecting group or hydrogen;

(e) treatment of compound XV with a non-nucleophilic strong base to form a compound of formula IX(a') which is tautomeric with formula IX(b')



IX(a')



IX(b')

wherein P is a removable hydroxy protecting group or hydrogen.

4,584,134

PROCESS FOR THE RECOVERY OF NOSIHEPTIDE

Satoshi Morioka; Makoto Shida; Nobuyuki Suzuki, and Kiyoshi Sekihara, all of Yokohama, Japan, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Jun. 29, 1984, Ser. No. 626,194
Claims priority, application Japan, Jul. 4, 1983, 58-121273
Int. Cl.[4] C07D *515/22*
U.S. Cl. 260—239.3 P 4 Claims

1. In a process for the separation and recovery of Nosiheptide from a culture of a Nosiheptide-producing strain of the genus Streptomyces by mixing the said culture with a solvent, separating a solvent-insoluble portion having mycelium as a main component, and recovering Nosiheptide from the solvent, the improvement which consists in using a cyclic ether as the said solvent.

4,584,135

PROCESS FOR THE PREPARATION OF AN OXYTETRACYCLINE-CALCIUM SILICATE COMPLEX SALT FROM FERMENTATION BROTH

János Bálint; László Cséke; Ferenc Fábián; Lajós Kün, and Miklós Szarvas, all of Debrecen, Hungary, assignors to Biogal Gyogyszergyar, Debrecen, Hungary

Filed Sep. 29, 1983, Ser. No. 537,293
Int. Cl.[4] C07C *103/26*
U.S. Cl. 260—351.6 21 Claims

1. A process for the preparation of an oxytetracycline-calcium silicate complex salt free from iron impurities from a fermentation broth which contains oxytetracycline, mycelium, and iron impurites which comprises the steps of:

(a) treating the fermentation broth with a water-soluble silicate to cause precipitation of the iron impurities as iron silicates;

(b) acidifying the fermentation broth to a pH of 0.5 to 3,0;

(c) filtering off mycelium and the precipitated iron silicates from the fermentation broth;

(d) adjusting the pH of the fermentation broth treated according to step (c) to 4 to 5 by the addition of lye;

(e) adding a calcium salt and a water-soluble silicate to the fermentation broth and stirring the fermentation broth;

(f) filtering off the mother liquor to yield the desired product; and

(g) drying the desired product at 20° to 120° C.

4,584,136

PROCESS FOR PREPARING ESTRACYT COMPOUNDS HAVING A CARCINOSTATIC BOUND THERETO

Masaru Yoshida; Masaharu Asano; Isao Kaetsu; Hidetoshi Yamanaka; Katsuyuki Nakai; Hisako Yuasa, and Keizo Shida, all of Gunma, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Mar. 1, 1985, Ser. No. 707,219
Claims priority, application Japan, Jun. 20, 1984, 59-127117
Int. Cl.[4] C07J *1/00*
U.S. Cl. 260—397.5 5 Claims

1. A process for preparing an Estracyt compound having a carcinostatic bound thereto, said process comprising reacting an Estracyt compound with a carcinostatic having one or more radicals selected from among COOH, Cl, NH_2 and OH, either directly or after reaction with an amine to replace one or both Cl groups in the nitrogen mustard portion in the Estracyt compound with an NH_2 group, in the presence or absence of a catalyst.

4,584,137

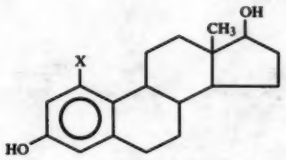
SYNTHESIS OF 1-HALOESTRADIOLS

Mark D. Hylarides, and Fred A. Mettler, Jr., both of Albuquerque, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Filed Apr. 9, 1984, Ser. No. 597,930
Int. Cl.[4] C07J *1/00*
U.S. Cl. 260—397.5 25 Claims

1. Estradiol or a derivative thereof having a 1-halo substituent.

21. A compound according to claim 1 of the formula



wherein X is halo, or radiohalo.

4,584,138

NOVEL FATTY ETHENOID ACYLAMINOORGANOSILICON COMPOUNDS AND THEIR USE AS A COUPLING AGENT

Enrico J. Pepe, Amawalk, N.Y., and James G. Marsden, Rowayton, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1983, Ser. No. 537,671
Int. Cl.[4] C09F *7/00*
U.S. Cl. 260—404.5 20 Claims

1. A novel fatty ethenoid acylaminoorganiosilicon compound selected from the group of fatty ethenoid acylaminoorganosilicon compounds representated by the general formula

$$Y[N(Y)_cR_{2-c}]_x[N(W)R^1]_y[N(Y)_bR_{2-b}^2]_z(HX)_w$$

wherein R and R^1 are individually selected from the group consisting of divalent alkylene groups containing from two to six carbon atoms inclusive, divalent arylene groups containing from six to twelve carbon atoms inclusive, divalent alkyl substituted arylene groups containing from seven to twenty carbon atoms inclusive, and a divalent group of the formula

wherein R^3 is a divalent alkylene group containing from two to six carbon atoms inclusive; R^2 is a monovalent alkyl or aryl group containing from one to ten carbon atoms or hydrogen; W is either hydrogen, or

wherein R^4 is a monovalent hydrocarbon group containing from 8 to 24 carbon atoms and containing at least one double bond; Y is selected from the group consisting of hydrogen,

wherein R^4 is as defined above, R^2; and $-R^5Si(OR^6)_{3-a}(R^7)_a$ wherein R^5 is a divalent alkylene group containing from two to six carbon atoms inclusive, R^6 and R^7 are individually a monovalent alkyl or aryl group containing from one to six carbon atoms inclusive; and R^6 may also be a silicon containing moiety

wherein the oxygen atom is directed bonded to the silicon atom of the R^6 silicon containing moiety; and a has a value of zero, one, or two; b has a value of zero, one or two; c has a value of zero or one; x and y have values such that x+y equal one to thirty with the proviso that x is at least one; z is zero or one; X is a halogen atom, hydroxyl, ester or anhydride group; w has a value equal to from zero to the sum of x+y+z provided that w does not exceed the total nitrogen atom in free amine form; with the proviso that at least one Y is $—R^5Si(OR^6)_{3-a}(R^7)_a$; and at least one other Y is

and when only one Y is $—R^5Si(OR^6)_{3-a}(R^7)_a$ then R^4 contains at least two double bonds; and when x=1, y=0 and z=0 then c=1.

4,584,139

HYDROGENATION OF LONG CHAIN OLEFINIC OILS WITH RANEY CATALYST

Thomas J. Gray, Guilford; Norman G. Masse, Wallingford; Tai-Nang Huang, and Michael J. Morgan, both of Guilford, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jan. 31, 1983, Ser. No. 462,267

Int. Cl.⁴ C11C *3/12*

U.S. Cl. 260—409 **32 Claims**

1. In a method for hydrogenating triglyceride vegetable oils with hydrogen in the presence of a catalyst, the improvement comprising employing as said catalyst a structure comprised of a Raney metal alloy surface layer integral with and derived from a selected nickel alloy monolithic substrate mesh structure, wherein said surface layer is predominantly derived from an adherent Beta structured crystalline precursor outer portion of the formula $Ni_xM_{1-x}A1_3$ where M is a catalyst activator selected from the group consisting of molybdenum, titanium, tantalum, ruthenium, or mixtures thereof and where x, the fraction of nickel in the combined weight of Ni and M, is within the range of from about 0.80 to about 0.95.

4,584,140

PROCESS FOR SEPARATING FATTY MATERIALS FROM SUPPORTED NICKEL CATALYSTS

Charles W. Blewett, Fort Mitchell, Ky., and Stephen W. Turner, Hamilton, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 17, 1984, Ser. No. 682,404

Int. Cl.⁴ C11B *1/10*

U.S. Cl. 260—412.8 **7 Claims**

7. A process for treating a supported nickel catalyst composition containing a fatty material which comprises:

(a) contacting the supported nickel catalyst composition having up to 60 percent by weight fatty material associated therewith with an essential equimolar amount, based on the amount of nickel in the supported catalyst composition, of a mineral acid;

(b) contacting the acid-treated supported nickel catalyst composition obtained from step (a) with a fluid maintained in a supercritical state for a time sufficient to dissolve a substantial portion of the fatty material in said fluid;

(c) separating said fluid having said fatty material dissolved therein and maintained in the supercritical state from the supported nickel catalyst composition;

(d) subjecting said fluid having the fatty material dissolved therein obtained from step (c) to conditions which convert the fluid to a non-supercritical state;

(e) separating the fatty material from the fluid which is maintained in a non-supercritical fluid state; and

(f) recovering the fatty material from step (e) and the supported nickel catalyst composition from step (c).

4,584,141

PROCESS RELATING TO TRIGLYCERIDE OILS

Bernhard G. A. Paulitz, Weinheim, Fed. Rep. of Germany; Jacobus C. Segers, Nieuwerkerk a/d IJssel, and Albert J. Spits, Oudenbosch, both of Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Mar. 7, 1984, Ser. No. 586,958

Claims priority, application United Kingdom, Mar. 18, 1983, 8307594

Int. Cl.⁴ C11C *1/08, 3/00*

U.S. Cl. 260—420 **25 Claims**

1. Process for removing impurities from a triglyceride oil including admixing a hydrolysed phosphatide and water with the impure oil, separating the thus treated oil at a temperature below 50° C. into a purified oil portion and a sludge portion and thereafter separating the sludge portion at a temperature from ambient temperature to 120° C. into an aqueous phase and an oil phase, the oil phase containing additional triglyceride oil in purified form.

4,584,142

ALKYL PERCARBONATES

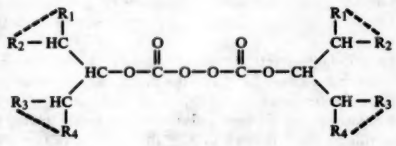
Robert H. Tang, Norton, and James A. Barter, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 3, 1983, Ser. No. 548,373

Int. Cl.⁴ C07C *179/15*

U.S. Cl. 558—264 **3 Claims**

1. An organic peroxydicarbonate of the graphic formula:



wherein R_1, R_2, R_3 and R_4 are each independently a C_1–C_4 alkyl, provided that not more than one of R_1 and R_2, and not more than one of R_3 and R_4 is tertiarybutyl, or R_1 and R_2, and R_3 and R_4 participate independently in a cycloalkyl group of from 3 to 6 carbon atoms.

4,584,143

FLUOROALKYL-CARBAMYL GROUP CONTAINING ACRYLATES AND METHACRYLATES

Robert A. Falk, New City, N.Y., assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Oct. 1, 1984, Ser. No. 655,835

Int. Cl.⁴ C07C *125/065, 155/02*

U.S. Cl. 558—240 **4 Claims**

1. A fluorinated monomer of the formula

R_f is perfluoroalkyl of 3 to 12 carbom atoms,
R_2 is alkylene of up to 12 carbon atoms, and
R_3 is hydrogen or methyl.

4,584,144
MONOMERIC THIOLOESTERIFICATION OF 1,3-ALKADIENE

Paul Foley, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,628
Int. Cl.[4] C07C 153/01
U.S. Cl. 558—250 28 Claims

1. A process for monomeric thioloesterification of 1,3-alkadiene which comprises (1) reacting 1,3-alkadiene with carbon monoxide and thiol compound in a liquid medium containing a stabilized halide-free catalyst complex of palladium and tertiary phosphine ligand; and (2) recovering alkyl 3-thioloalkenoate product.

4,584,145
PROCESS FOR PREPARING CARBONYL COMPOUNDS

Roberto Santi, Novara; Giuseppe Cometti, Verbania-Pallanza, and Anselmo Pagani, Trecate, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jun. 19, 1985, Ser. No. 746,305
Claims priority, application Italy, Jun. 20, 1984, 21520 A/84
Int. Cl.[4] C07C 121/76, 69/716
U.S. Cl. 558—406 11 Claims

1. A process for preparing a compound of formula:

(I)

by direct oxidation of a compound of formula:

(II)

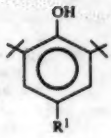
in which X is an organic radical selected from —CN, —COOR and Y is an organic radical selected from —$COOR_1$ and —CN, wherein R and R_1, like or unlike each other, are inert organic substituents in the reaction conditions, characterized in that the oxidation of the compound of formula (II) is accomplished by using oxygen or air as oxidants, in the presence of at least a catalyst selected from the salts of Mn, Co, Cu and Fe of organic or inorganic acids, and of 0–60 moles of an alkaline salt of an aliphatic carboxylic acid per gram-atom of catalyst metal, in a reaction medium consisting of a polar solvent in which the catalyst may be soluble, at a temperature ranging from 30° to 200° C. and maintaining the reaction medium anhydrous.

4,584,146
TETRAKIS(2,6-DI-T-BUTYL-4-SUBSTITUTED PHENYL)4,4'-BISPHENYL DIPHOSPHITES

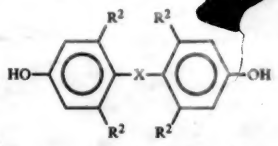
Dwight W. Chasar, Northfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 20, 1983, Ser. No. 543,725
Int. Cl.[4] C07F 9/141; C08K 5/52
U.S. Cl. 558—156 3 Claims

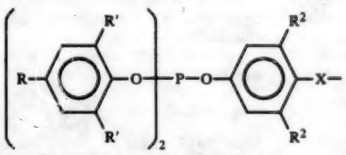
1. Tetrakis(2,6-di-t-butyl-4-substituted phenyl)4,4'-bisphenyl diphosphite reaction products of (1) about 2 mols of 4-substituted-2,6-t-alkylphenyl phosphorochloridite reaction products of PCl_3 and hindered alkylphenols having the formula

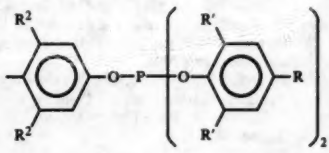


wherein + is t-butyl, R^1 is a primary, secondary or tertiary alkyl radical containing 1 to 4 carbon atoms, or —OR^4 wherein R^4 is an alkyl radical containing 1 to 4 carbon atoms, —$COOR^5$ wherein R^5 is an alkyl radical containing 1 to 4 carbon atoms, and $CH_2CH_2COR^6$ wherein R^6 is an alkyl radical containing 1 to 4 carbon atoms, with about 1 mol of phenolates of bisphenols of the formu[illegible]



wherein R^2 is hydrogen and X is —S—, said diphosphites having the formula





wherein R is an alkyl radical containing 1 to 4 carbon atoms, —OR^3 wherein R^3 is an alkyl radical containing 1 to 4 carbon atoms, —$COOR^4$ wherein R^4 is an alkyl radical containing 1 to 4 carbon atoms and $CH_2CH_2COR^5$ wherein R^5 is an alkyl radical containing 1 to 4 carbon atoms; R^2 is hydrogen; and X is —S—.

4,584,147
SWIRL NOZZLES, ESPECIALLY FOR SCRUBBING TOWERS FOR FLUE GASES

Werner Stehning, Dorsten, Fed. Rep. of Germany, assignor to Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserrückkühlanlagen GmbH & Co. Kommanditgesellschaft, Essen, Fed. Rep. of Germany

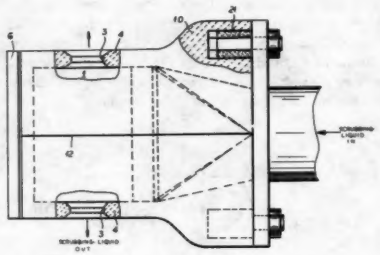
Filed Mar. 1, 1985, Ser. No. 707,430
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1984, 3407706
Int. Cl.[4] B01F 3/04
U.S. Cl. 261—115 17 Claims

1. A swirl nozzle, especially for a flue gas scrubbing tower for physical and/or chemical cleaning of flue gas from a power plant boiler, said nozzle comprising:

a substantially cylindrical nozzle chamber adapted to receive a scrubber fluid;

at least one tangential scrubber fluid inlet leading into said nozzle chamber for passing scrubber fluid from a source thereof into said nozzle chamber, said nozzle chamber and said tangential scrubber fluid inlet being jointly formed in a body made of ceramic wear material;

at least one nozzle bore for the egress of scrubber fluid from said nozzle chamber formed in a nozzle chamber bottom provided at an end of said body, said nozzle bore extending coaxially with respect to said nozzle chamber, said nozzle chamber bottom being made of ceramic wear material;



a conduit for feeding scrubber fluid to said nozzle chamber, said conduit being connectable at said tangential scrubber fluid inlet, and said conduit being adapted to support said body;

a pair of steel stress plates flanking at least said body, one of said stress plates including an opening communicating with said tangential scrubber fluid inlet; and

a plurality of tensioning screws mounted in respective stress plates for maintaining said body under compression prestress.

4,584,148

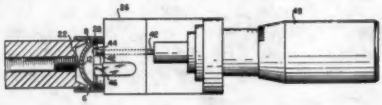
METHOD FOR THE PRECISION TRIMMING OF THE EDGE OF A CENTRIFUGALLY CAST LENS

David L. Rawlings, Bayville, and Michael A. Dillon, Rockaway Point, both of N.Y., assignors to International Hydron Corporation, Woodbury, N.Y.

Division of Ser. No. 575,250, Jan. 30, 1984, Pat. No. 4,534,723. This application Mar. 25, 1985, Ser. No. 715,544

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—2.1 **3 Claims**



1. A method of trimming a selected peripheral edge segment of a lens secured within a mold, said mold having a flange with an annular face disposed normal to the axis of the mold and said annular face defining a cavity, said cavity having a base into which the lens is secured and the exposed outer surface of the base being disposed within a peripheral skirt extended from one end of the mold, said method comprising the steps:

(a) securing one end of the mold on a mandrel such that the axially area of the base of the cavity contacts and is adapted to pivot on a centrally projected member on the mandrel;

(b) orientating a cutting means having an end base adapted for seating and sliding upon the face of the annular flange of the mold and having a projected cutting edge in opposed facing relation to the lens secured within the mold;

(c) imparting rotational motion between the lens secured in the female mold and the cutting means; and

(d) projecting said base and cutting edge of the cutting means into the mold containing the lens such that said cutting edge contacts at least a peripheral edge segment of the lens and continuing the projection of the cutting means until the base contacts and slides upon the annular face of the flange in the mold so as to insure proper alignment of the mold with the cutting edge thereby insuring that a precision trimming of the peripheral edge segment of the lens has been made.

4,584,149

PROCESS FOR PREPARING SELF-EXTINGUISHING FORMED THERMO-PLASTIC BODIES BASED ON POLYCAPROLACTAM

Giovanni C. Alfonso; Saverio Russo; Enrico Pedemonte; Antonio Turturro, all of Genoa, and Concetto Puglisi, Catania, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Jun. 11, 1984, Ser. No. 619,030

Claims priority, application Italy, Jul. 4, 1983, 21912 A/83

Int. Cl.⁴ B29B *9/10, 9/14;* B29C *39/00;* C08K *9/10*

U.S. Cl. 264—5 **5 Claims**

1. A process for preparing self-extinguishing shaped thermoplastic bodies comprising poly-caprolactam and red phosphorus, which process comprises preparing at first a mixture consisting of 80 to 99% of molten ϵ-caprolactam monomer and 1–20% of red phosphorus powder, said powder being in the form of microparticles encapsulated in a synthetic resin shaping the mixture into said shaped body, and then causing the anionic polymerization of said monomer to occur.

5. The process according to claim 1 in which said microencapsulated red phosphorus powder is incorporated and dispersed, in the mass of molten ϵ-caprolactam, which is formed into flakes or granules consisting of about 50% (by weight) of said powder and of about 50% (by weight) of solid ϵ-caprolactam.

4,584,150

METHOD FOR THE CONTINUOUS EXTRUSION OF AN EXTRUSION, PARTICULARLY A WEATHER STRIP FOR MOTOR VEHICLE BODIES

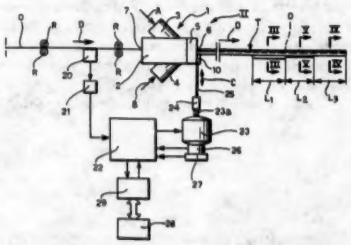
Guido Ballocca, Turin, Italy, assignor to S.A.I.A.G. S.p.A., Turin, Italy

Filed Dec. 9, 1983, Ser. No. 560,055

Claims priority, application Italy, Dec. 10, 1982, 68449 A/82

Int. Cl.⁴ B28B *23/02*

U.S. Cl. 264—40.1 **6 Claims**



1. A method for the continuous extrusion of an extrusion, such as a weather strip for motor vehicle bodies, having successive portions of predetermined length with respective predetermined sections, using an extrusion head with an extrusion orifice and adjusting means which, when activated, modify the section of the extrusion orifice, wherein the method comprises the following operations:

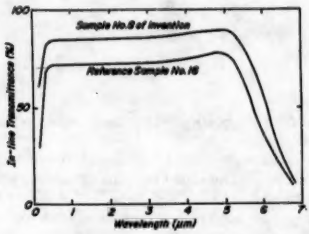
feeding an elongate member having reference means regularly spaced along the length thereof to the extrusion head

simultaneously with the material to be extruded so that the member is incorporated in said extrusion during extrusion; detecting the advance of said member upstream of said extrusion head by detecting the passage of said reference means, and synchronising the operation of said adjusting means with the advance of said member to adjust said extrusion orifice upon the passage of a predetermined length of said member.

4,584,151
METHOD OF PRODUCING A POLYCRYSTALLINE TRANSPARENT SPINEL SINTERED BODY

Minoru Matsui, and Tomonori Takahashi, both of Nagoya, Japan, assignors to NKG Insulators, Ltd., Japan

Division of Ser. No. 498,576, May 26, 1983, Pat. No. 4,543,346.
This application Jul. 15, 1985, Ser. No. 754,995
Claims priority, application Japan, Dec. 27, 1982, 57-232545
Int. Cl.[4] C04B 35/44
U.S. Cl. 264—65 11 Claims

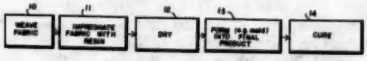


1. A method of producing a polycrystalline transparent spinel sintered body, comprising the steps of preparing an isopropanol solution of aluminum isopropoxide and magnesium isopropoxide, generating precipitates by hydrolysis of the isopropanol solution, heating the precipitates so as to form fine spinel powder consisting essentially of Al_2O_3 and MgO in a molar ratio of (0.502:0.498) to (0.524:0.476), forming a shaped body from the spinel powder, and firing the shaped body at a temperature higher than 1,700° C. in a hydrogen atmosphere.

4,584,152
CONTROLLING FABRIC POROSITY

Jack Leach, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Jun. 14, 1984, Ser. No. 620,621
Int. Cl.[4] B29H 9/02
U.S. Cl. 264—103 15 Claims



1. A method of producing fiber reinforced plastic products comprising the steps of:

(a) weaving a fabric on a loom with warp ends and weft filling;

(b) varying the spacing between the warp ends at the edges of the fabric during weaving, compared to the warp ends at the center of the fabric;

(c) removing the fabric from the loom such that as a strain on the warp and weft yarns is relieved after removal of the fabric from the loom, the fabric has uniform porosity;

(d) impregnating the fabric with resin;

(e) drying the impregnated fabric;

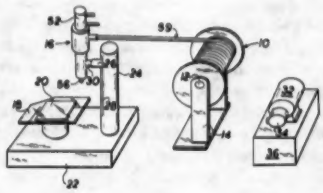
(f) forming a final fiber reinforced plastic product having substantially uniform amounts of resin throughout its volume; and

(g) curing the resin.

4,584,153
BUTYL DISPENSING METHOD

Charles R. Bacon, Jackson, Mich., assignor to Adco Products, Inc., Michigan Center, Mich.

Filed Nov. 25, 1983, Ser. No. 555,134
Int. Cl.[4] B29C 47/10
U.S. Cl. 264—169 1 Claim



1. The method of dispensing a thermoplastic material which is flexible and tacky at normal ambient temperatures comprising the steps of

(a) circumferentially encasing an elongated strip of the tacky thermoplastic material within a thermoplastic flexible film which is non-tacky at normal ambient temperatures and chemically compatible with respect to said tacky material,

(b) feeding said encased strip into an elongated mixing chamber having an encased strip receiving portion, a discharge portion axially spaced from the receiving portion and a rotating auger extending between said encased strip receiving and discharge portions,

(c) cooling the chamber and encased strip at the encased strip receiving portion to increase the viscosity of the thermoplastic strip material thereat,

(d) drawing said encased strip into the mixing chamber by the operation of the rotating auger,

(e) mixing the tacky material and film within the chamber by the auger to form a mixture,

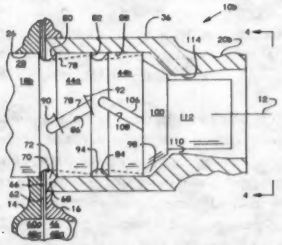
(f) heating said chamber and material at said chamber discharge portion to an elevated temperature to facilitate mixture flow, and

(g) discharging said heated mixture from a nozzle at said chamber discharge portion.

4,584,154
CROSSHEAD WITH LONGITUDINAL AND TRANSVERSE SHEAR MIXERS

Daryl D. Cerny, Greenville, Ohio, assignor to Ball Corporation, Muncie, Ind.

Filed Mar. 1, 1985, Ser. No. 707,348
Int. Cl.[4] B29D 23/04; B29F 3/04; B01F 7/10
U.S. Cl. 264—209.2 49 Claims



1. A crosshead for extruding a thermoplastic material along a longitudinal axis, which crosshead comprises:

supply passage means, being disposed radially outward from said longitudinal axis, for receiving molten thermoplastic material;

distribution passage means, comprising a first distribution branch that is in fluid communicationn with said supply passage means, for providing a flow of said thermoplastic material that has a first cross sectional area and that is distributed around said longitudinal axis;

first compressive forging passage means, being disposed around said longitudinal axis, and being in fluid communication with said distribution passage means, for compressively forging said thermoplastic material into a second cross sectional area, and thereby mixing said thermoplastic material by means of transverse viscous shear;

longitudinal shear mixing means, being disposed around said longitudinal axis, and being in fluid communication with said first compressive forging passage means, for mixing said thermoplastic material by means of longitudinal viscous shear;

second compressive forging passage means, being disposed around said longitudinal axis, and being in fluid communication with said longitudinal shear mixing means, for compressively forging said thermoplastic material into a third cross sectional area, and thereby mixing said thermoplastic material by means of transverse viscous shear; and

extrusion opening means, comprising a core that is disposed along said longitudinal axis, comprising a die opening that is annularly disposed around said core and that is in fluid communication with said second compressive forging passage means, and comprising the annular space between said core and said die opening, for extruding said thermoplastic material into a tubular layer of thermoplastic material with a fourth cross sectional area that is substantially equal to said annular space.

38. A crosshead for extruding a thermoplastic material along a longitudinal axis, which crosshead comprises:

supply passage means, being disposed radially outward from said longitudinal axis, for receiving molten thermoplastic material;

distribution passage means, comprising a first distribution branch that is in fluid communication with said supply passage means, for providing a flow of said thermoplastic material that has a first cross sectional area and that is distributed around said longitudinal axis;

a mixing passage, having an inlet that is disposed around said longitudinal axis and that is in fluid communication with said distribution passage means, having an outlet that is disposed around said longitudinal axis and that is displaced longitudinally from said inlet, having first diverting means for diverting said flow of thermoplastic material around said longitudinal axis in one direction, and having second diverting means for receiving said diverted thermoplastic material and for diverting said flow of thermoplastic material around said longitudinal axis in the other direction; and

extrusion opening means, being in fluid communication with said outlet of said mixing passage, comprising a core that is disposed along said longitudinal axis, comprising a die opening that is annularly disposed around said core and that is in fluid communication with said outlet of said mixing passage, and comprising the annular space between said core and said die opening, for extruding said thermoplastic material into a tubular layer of thermoplastic material with a cross sectional area that is substantially equal to said annular space.

4,584,155

METHOD AND DEVICE FOR MANUFACTURING GLASS SHEETS HAVING SURFACE STRUCTURES MOLDED-ON BY SUPERFICIAL MOLDING

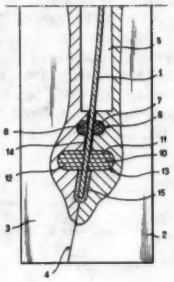
Guy E. A. Zanella, Cognin, France, assignor to Saint-Gobin Vitrage, Courbevoie, France

Filed May 25, 1984, Ser. No. 614,035

Claims priority, application France, May 30, 1983, 83 08903

Int. Cl.[4] B29C *13/18, 39/10*

U.S. Cl. 264—252 **10 Claims**



1. a method for superficially molding surface structure on a glass sheet, comprising:

(a) inserting said glass sheet in an opened mold comprised of two plates, said mold having a first cavity delimited by a hermetic seal;

(b) closing said mold by bringing said plates together;

(c) evacuating said first cavity;

(d) injecting an injection moldable plastic material into a second cavity in said mold, said second cavity defining the limits of the said molding with the aid of a molding seal which is disposed in at least one of the mold plates, said molding seal exhibiting elasticity in a direction generally perpendicular to the surface of the glass sheet and sufficient rigidity to withstand the injection, and comprising a Shore A hardness of between about 65 and 95;

(e) allowing polymerization of the said moldable plastic material;

(f) separating the said plates for the said molded plastic material;

(g) removing said glass sheet having the molded-on surface structure;

(h) said hermetic seal and said molding seal being different structures.

4,584,156

MOLD AND METHOD OF MANUFACTURING POLYURETHANE PRODUCTS

Johannes J. Ponjee, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 28, 1985, Ser. No. 737,995

Claims priority, application Netherlands, Jun. 18, 1984, 8401922

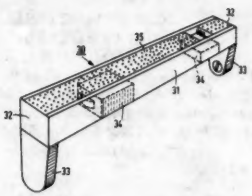
Int. Cl.[4] B29C *33/60, 67/20*

U.S. Cl. 264—263 **6 Claims**

1. A mould which is suitable for manufacturing a product, the surface of which product consists at least partly of polyurethane, at least that part of the mould surface which contacts the polyurethane consisting of a metal and being provided with a release agent, characterized in that the release agent comprises a monolayer of an alkylmercaptan.

6. A method of manufacturing a luminaire for a tubular discharge lamp, in which an elongate housing having a substantially U-shaped cross-section is provided with electric components and wiring, whereupon the housing is filled with a urethane-forming mixture and closed by means of a mould; in

the resulting enclosed space the urethane-forming mixture reacts to form a polyurethane, after which the mould is removed from the housing, characterized in that at least that part



of the mould surface which contacts the polyurethane is covered with, in succession, a silver layer and a monlayer of an alkylmercaptan.

4,584,157

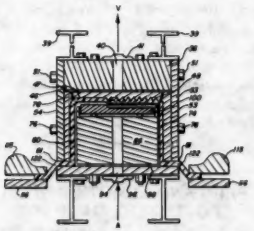
METHOD FOR DOUBLE-SIDE THERMOFORMING

Stephen J. Sweig, Buffalo Grove, Ill., assignor to Arrem Plastics, Inc., Addison, Ill.

Continuation of Ser. No. 488,110, Apr. 25, 1983, abandoned. This application May 23, 1985, Ser. No. 737,820

Int. Cl.[4] B29C *51/10, 59/02*

U.S. Cl. 264—522 **7 Claims**



1. A method for double-side thermoforming a sheet of plastic with opposite faces comprising:

heating said plastic sheet to its transition temperature range;

forming at least a portion of one face of said plastic sheet by causing a contour-forming first surface to contact said one face and urging said one face portion against the first surface to cause said one face portion to conform to said first surface;

freezing-off said one face while maintaining at least a portion of the other face of said sheet at least partially aligned oppositely of said one face portion at a temperature within the transition temperature range;

forming said portion of the other face of said sheet by causing said portion of said other face of said sheet to contact a contour-forming second surface and urging said other face portion of said sheet against the second surface to cause said other face portion to conform to said second surface while substantially maintaining the frozen-off configuration of said one face portion; and

freezing-off said other face portion.

4,584,158

METHOD FOR PRODUCING A BIAXIALLY ORIENTED CONTAINER FROM A BLANK OF THERMOPLASTIC MATERIAL

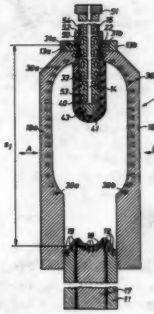
Claes T. Nilsson, Löddeköpinge, and Kjell M. Jakobsen, Skanör, both of Sweden, assignors to Petainer S.A., Neuchatel, Switzerland

Filed Mar. 7, 1984, Ser. No. 587,232

Claims priority, application Sweden, Mar. 10, 1983, 8301291

Int. Cl.[4] B29C *49/12, 49/16*

U.S. Cl. 264—529 **14 Claims**



1. In a method of producing a temperature-stable container of thermoplastic material from a blank which has a closure at one end, wherein the blank is heated to a temperature above the glass transition (TG) of the material, and is reshaped to abut against mould walls in order to form the container, the improvement comprising, in a first moulding stage, extending the blank in its axial direction to stretch the material of the blank to achieve axial orientation of the stretched material determined by the conditions of the magnitude of the extension, material temperature and stretching speed, the axially stretched material of the heated, extended blank tending to undergo shrinkage after the axial extending step due to internal stresses induced in the material and in a second moulding stage expanding the stretched material at elevated temperature into abutment with the mould walls at a controlled time and speed of expansion such that reduction in length of the stretched material due to shrinkage takes place during said second moulding stage and is concluded before the material comes into contact with the walls of the mould whereby to substantially eliminate said internal stresses.

4,584,159

PLASMA WAVE DAMPING SYSTEM AND METHOD

Winfield W. Salisbury, Scottsdale, Ariz., assignor to Energy Profiles, Inc., Newtown Square, Pa.

Continuation of Ser. No. 76,451, Sep. 17, 1979, abandoned. This application Oct. 15, 1982, Ser. No. 434,597

Int. Cl.[4] G21B *1/02*

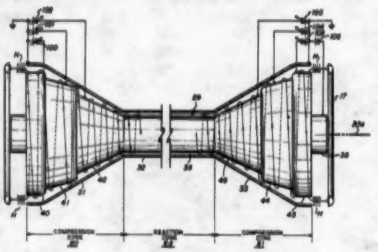
U.S. Cl. 376—107 **15 Claims**

1. In a fusion reaction system where positive ions from two sources are to spiral toward each other in a radial D.C. electric field on a common axis while rotating in opposite senses in orbital paths of common radii in an annular reaction zone of circular symmetry at any given cross-section perpendicular to the axis of said paths and bounded by spaced apart outer and inner coaxial electrode walls for promoting collisions of ions in one beam with ions in the other beam, the improvement comprising:

(a) electrically conductive coil means formed as a helix in said zone adjacent to at least one of said inner and outer walls of said zone, and

(b) electrical terminal means for said coil means, having resistance about equal the characteristic impedance of said

coil means, said coil means having a spiral pitch determined by said spiral of said ion beams wherein the pitch of said coils is substantially the same as the pitch of the spiral



paths of the ions in said ion beams for effectively coupling spontaneous space charge waves in said reaction zone with said coils for damping.

4,584,160

PLASMA DEVICES

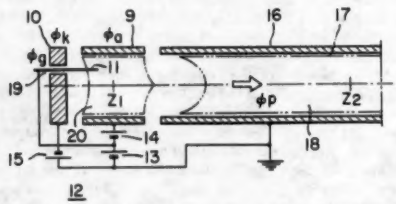
Katsuhiro Kageyama, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 24, 1982, Ser. No. 423,293

Claims priority, application Japan, Sep. 30, 1981, 56-153763; Dec. 10, 1981, 56-197732; Dec. 10, 1981, 56-197733; Mar. 12, 1982, 57-38153; Mar. 12, 1982, 57-38157; Mar. 12, 1982, 57-38159

Int. Cl.⁴ G21B *1/00*

U.S. Cl. 376—141 **9 Claims**



1. In a plasma device of the type comprising a vacuum vessel, means for creating an open-ended magnetic field containing a plasma, and a plurality of electrostatic plugs disposed at open-ended portions of said magnetic field and forming an electric field having a component parallel to the direction of said magnetic field, at least one of said electrostatic plugs including a limiter grounded to said vacuum vessel, provided with an inner hollow portion and arranged so as to control a potential of the space in which said plasma is confined, the improvement in which said electrostatic plug comprises, in addition to said limiter, an anode electrode disposed at an open-ended portion spaced therefrom and provided with an inner hollow portion extending along a direction of said open-ended magnetic field so as to allow all magnetic lines passing through the inner hollow portion of said limiter to pass through said hollow portion of said anode electrode, a cathode electrode spaced from said anode electrode and disposed on a side of said anode electrode opposite to said limiter, said cathode electrode being provided with a through hole, a control electrode disposed so as to pass through the through hole of said cathode electrode and extending into the hollow portion of said anode electrode without contacting with said cathode electrode for controlling electron density thereby to determine the space potential distribution, and means for applying potentials to said anode electrode, said control electrode, said limiter, and said cathode electrode, said potentials being higher in the stated order.

4,584,161

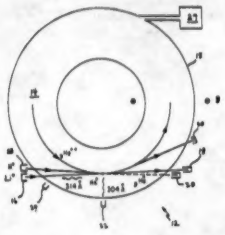
USE OF $^3HE^{30}$ + ICRF MINORITY HEATING TO SIMULATE ALPHA PARTICLE HEATING

Douglass E. Post, Jr., Belle Mead; David Q. Hwang, Lawrenceville, and Jane Hovey, Plainsboro, all of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 16, 1983, Ser. No. 552,532

Int. Cl.⁴ G21B *1/00*

U.S. Cl. 376—143 **9 Claims**



1. A method for simulating the behavior of energetic alpha particles produced in a magnetically confined first plasma wherein deuterium and tritium undergo fusion reactions, comprising the steps of:

(a) producing a second plasma which includes deutrons and $^3He^{++}$ ions;

(b) providing high energy radio frequency radiation to said second plasma for energizing said $^3He^{++}$ ions to an initial energy distribution closely approximating the energy distribution of said fusion-product alpha particles; and

(c) detecting the energies of said $^3He^{++}$ ions, as said $^3He^{++}$ ions lose energy in said second plasma, said detected energies of said $^3He^{++}$ ions corresponding linearly to the energies of said alpha particles in said first plasma as said alpha particles slow down in energy, thereby simulating the energies of said alpha particles as they lose energy in said first plasma.

4,584,162

PIPE PLUG AND REMOTE INSTALLATION EQUIPMENT THEREFOR

Alfred H. Yoli, New City, N.Y., assignor to Preferred Utilities Manufacturing Corp., Danbury, Conn.

Filed Mar. 31, 1982, Ser. No. 363,797

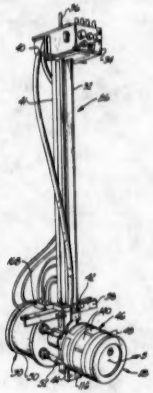
Int. Cl.⁴ F16L *55/12*; B25B *21/00*

U.S. Cl. 376—204 **33 Claims**

15. A pipe plug device comprising, in combination, a plug member made of resilient material which, when compressed in one direction, expands in a direction transverse to said one direction, said plug member being elongated in said one direction and having a rounded sealing surface, a pair of relatively rigid end members, each being positioned at one end of said plug member, a plurality of relatively rigid gripper shoes secured to said plug member adjacent said sealing surface at locations around the periphery of said plug member, anchors imbedded in the material of said plug member and secured to said shoes to anchor said shoes to said plug member and compression means for urging said end members towards one another so as to compress said plug member in said one direction.

22. A remote installation and removal tool for installing pipe plugs in reactor vessels having elongated steam lines, said plugs having one or more axially-extending bolts and nuts to be tightened or loosened to seal or unseal the plugs, said tool

comprising an elongated beam of sufficient length to reach one of said steam lines from above and outside of said vessel, a power-driven wrench mounted adjacent one end of said beam,



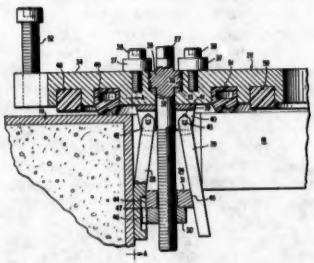
fastening means adapted for releasably fastening one of said plugs to said beam with said bolt in alignment with said nut and extending transversely of said beam, and remotely controllable means for energizing said wrench to rotate said nut.

4,584,163

REACTOR CAVITY SEAL RING

Michael F. Hankinson, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 1, 1984, Ser. No. 576,059
Int. Cl.[4] G21C *13/06*; B65D *53/00*
U.S. Cl. 376—205 **14 Claims**



1. A hydrostatic seal for sealing an annular gap between two flat substantially horizontal coplanar surfaces comprising, in combination:

a generally flat annular plate of a width sufficient to span a gap between two surfaces; compressible annular sealing means disposed on the bottom surface of said flat annular plate for sealingly engaging the two flat surfaces in response to a downward force exerted on said plate; and a plurality of fastening means, distributed along the center line of said plate, for releasably fastening said plate in a position to span the gap to be sealed and exert a downward force on said plate, each said fastening means including a pair of elongated members of a size to fit into the gap to be sealed, means for mounting said members on said bottom surface of said plate so that at least a portion of each said member is radially moveable in a direction toward a respective one of the vertical side surfaces defining the gap to be sealed to engage same and so that said plate is moveable relative to said members in a downward direction in response to hydrostatic pressure applied to the upper surface of said plate when said members are engaging the vertical side surfaces of an annular gap, and an actuating means, mounted on said plate for movement therewith in response to hydrostatic pressure, for radially moving said members, said actuating means extending through a bore in said plate to the upper surface of said plate.

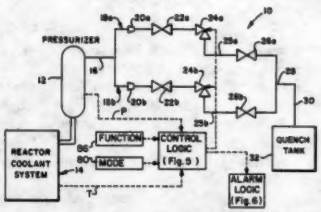
12. In a nuclear reactor containment arrangement which is partially flooded with liquid during refueling of a nuclear reactor of the type which is refueled from the top including an enclosing structure having a generally circular cavity therein, a reactor vessel having a radially extending horizontal annular flange disposed in the cavity and spaced from the wall of the cavity to define an annular gap therebetween, an annular surface on the inner wall of said enclosing structure with said annular surface being substantially coplanar with the upper surface of said flange, and a hydrostatic seal for sealingly engaging the upper surface of said radially extending annular flange and said annular surface on said inner wall to seal said gap when the cavity is to be flooded to refuel the reactor; the improvement wherein said hydrostatic seal comprises: a generally flat annular plate of a width sufficient to span said gap between said two surfaces; compressible annular sealing means disposed on the bottom surface of said flat annular plate for sealingly engaging the two flat surfaces in response to a downward force exerted on said plate; and a plurality of fastening means, distributed along the center line of said plate, for releasably fastening said plate in a position to span said gap and exert a downward force on said plate, each said fastening means including a pair of elongated members of a size to fit into said gap, means for mounting said members on said bottom surface of said plate so that at least a portion of each said member is radially moveable in a direction toward a respective one of the vertical side surfaces defining said gap to engage same and so that said plate is moveable relative to said members in a downward direction in response to hydrostatic pressure applied to the upper surface of said plate when said members are engaging the vertical side surfaces defining said gap, and an actuating means, mounted on said plate for movement therewith in response to hydrostatic pressure, for radially moving said members, said actuating means extending through a bore in said plate to the upper surface of said plate.

4,584,164

VALVE CONTROL FOR LOW TEMPERATURE OVERPRESSURE PROTECTION IN A NUCLEAR POWER PLANT

Craig W. McMullin, Granby, and Steven E. Weismantel, Bloomfield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 3, 1982, Ser. No. 384,456
Int. Cl.[4] G21C *7/36, 17/02, 9/00*
U.S. Cl. 376—216 **4 Claims**



1. In a nuclear power plant having a reactor coolant system and associated coolant pressure boundary, a control system for

overpressure protection of the reactor coolant boundary to prevent violating a prescribed pressure-temperature relationship, comprising:

a relief nozzle connected to the reactor coolant boundary;

a fluid collector remote from the reactor coolant boundary;

first and second system relief lines connected in parallel between the nozzle and the collector, the relief lines having respective first and second power operated relief valves;

control means for operating each of said power relief valves, said control means including logic means responsive to signals indicative of the pressure and temperature of the reactor coolant, a mode selector switch for selecting either normal or low temperature overpressure protection, and a function selector switch having an off position and a position for selectively introducing a simulated overpressure signal to said logic means;

wherein said control means opens the first relief valve when (a) the function selector switch is off and (b) the mode selector switch is in the normal position and (c) the coolant pressure is greater than a set point value P_{FP} above the pressure corresponding to full power operation; and

wherein said control means opens at least the first relief valve when (a) the function selector switch if off and (b) the mode selector switch is in the lower temperature overpressure protection position, (c) the temperature of the coolant is less than a preselected value T_M and (d) the pressure of he coolant is greater than a preselected value P_1 less than P_{FP} whereby the opening of the first or first and second valves provides a conduit path to discharge coolant from the reactor coolant system to the fluid collector for reducing the pressure in the coolant system.

4,584,165

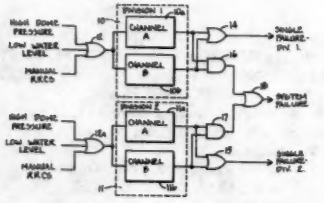
REDUNDANT REACTIVITY CONTROL SYSTEM

Patricia A. Wilson; Kenneth B. Stackhouse; Sujit Chakraborty, all of San Jose; Walter S. Ching, Sunnyvale; William D. Hill, San Jose; John B. Knepp, San Jose; James P. Ward, San Jose, and Warren L. Zediker, Sunnyvale, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 9, 1983, Ser. No. 465,314

Int. Cl.[4] G21C *7/36*

U.S. Cl. 376—216 **28 Claims**



1. A reactivity control system for a nuclear reactor, comprising:

sensors for monitoring critical reactor operating parameters and for sensing conditions indicative of an anticipated transient without scram (ATWS) event;

means for monitoring average reactor power range;

a timer, defining a reactor interval during which monitored average power range must settle within a selected safe reactor operation limit;

means for actuating reactor safety systems in response to a sensed ATWS event; and

means for indicating needed operation of a reactor standby safety system at the end of said timer reactor interval when said monitored average power range has not settled within said selected safe reactor operation limit in response to actuation of said reactor safety systems.

4,584,166

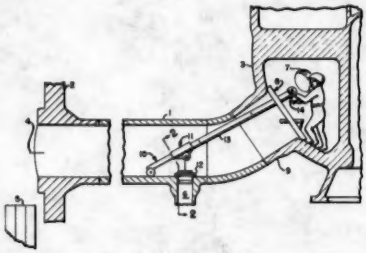
TOOLING SYSTEM FOR REMOTE LOAD POSITIONING

John S. Greacen, Avon, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 29, 1983, Ser. No. 480,168

Int. Cl.[4] G21C *19/20*

U.S. Cl. 376—260 **10 Claims**



1. A tooling system for transporting a load to a target from a remote position, comprising:

a support frame adapted to be rigidly mounted at the remote position;

an elongated track supported at the upper end by the frame and the other end adapted to extend beyond the target;

a trolley mounted on the track and freely moveable under the influence of gravity on said track section;

a drum assembly carried by said trolley, said drum assembly including a load drum having diameter D_1 and a larger control drum having a diameter D_2, said load drum and control drum connected to turn as a unit; a load support line wound on the load drum at one end and having means at the other end for connection to the load;

a control line affixed to and wound on the control drum in a direction opposite to said support line winding. The number of wraps of control line being equal to or greater than the number of revolutions of the load drum required to move the load between its final position on the target and the carrying position under the trolley, when the load drum is directly above the target;

winch means operable from the remote position, for selectively drawing the control line toward or paying out the control line from the remote location;

restraint means carried by the track for stopping the trolley directly over the target;

whereby the load is transported up or down the inclined track while remaining in a vertical attitude such that when positioned over the target the load moves vertically with respect to the trolley, the transport and vertical movement being responsive to said single control line.

4,584,167

BLANKET MANAGEMENT METHOD FOR LIQUID METAL FAST BREEDER REACTORS

Mario D. Carelli, Greensburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 371,332, Apr. 23, 1982, abandoned. This application Jun. 11, 1984, Ser. No. 618,769

Int. Cl.[4] G21C *19/00*

U.S. Cl. 376—267 **15 Claims**

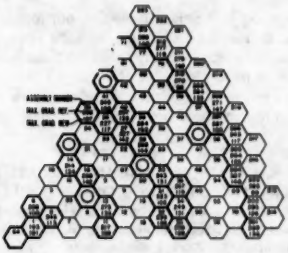
1. The method of moving blanket assemblies during refueling in a heterogeneous-type core for a liquid-metal-cooled fast-breeder nuclear reactor to improve the performance thereof, said core comprising a plurality of fissile-material-containing fuel assemblies and a plurality of fertile-material-containing blanket assemblies, said blanket assemblies including a plurality of inner blanket assemblies positioned in predetermined different locations within the interior of said core and radial blanket assemblies positioned proximate the periphery of said core, said inner blanket assemblies located proximate the

center of said core and also positioned to form a plurality of separate blanket assembly rows which are radially spaced from one another and also from said radial blanket assemblies and are generally concentric with respect to the center of said core, said radial blanket assemblies comprising inner and outer contiguous rows of individual blanket assemblies positioned proximate the periphery of said core, said fuel assemblies comprising a plurality of separate fuel assembly rows positioned intermediate said spaced blanket assembly rows, and said reactor being periodically refueled at the termination of predetermined periods of reactor operation, said method comprising moving said blanket assemblies in accordance with the following schedule:

prior to blanket assembly movement during refueling, approximately one-half of said inner blanket assemblies having been operated as inner blanket assemblies for one of said predetermined periods of reactor operation and approximately one-half of said inner blanket assemblies having been operated as inner blanket assemblies for two of said predetermined periods of reactor operation, and during refueling performing the following operations:

replacing approximately one-half of all of said inner blanket assemblies with fresh blanket assemblies;

moving blanket assemblies which have been operated as inner blanket assemblies for one of said predetermined periods of reactor operation to replace substantially all of those of said inner blanket assemblies which are not replaced with fresh blanket assemblies;



moving substantially all of said inner blanket assemblies which have been operated as inner blanket assemblies for two of said predetermined periods of reactor operation to replace blanket assemblies in said inner radial blanket assembly row;

moving substantially all of said blanket assemblies which are replaced from said inner radial blanket assembly row to replace blanket assemblies in said outer radial blanket assembly row; and

repeating the foregoing blanket assembly movements in subsequent refuelings, whereby the substantial majority of said blanket assemblies are initially operated in inner blanket assembly positions for one of said predetermined periods of reactor operation and are subsequently operated in different inner blanket assembly positions for an additional one of said predetermined periods of reactor operation after which they are operated in inner radial blanket assembly positions for one of said predetermined periods of reactor operation after which they are operated in outer radial blanket assembly positions for one of said predetermined periods of reactor operation.

12. The method of moving blanket assemblies during refueling in a heterogeneous-type core for a liquid-metal-cooled fast-breeder nuclear reactor to improve the performance thereof, said core comprising a plurality of fissile-material-containing fuel assemblies and a plurality of fertile-material-containing blanket assemblies, said blanket assemblies including a plurality of inner blanket assemblies positioned in predetermined different locations within the interior of said core and radial blanket assemblies positioned proximate the periphery of said core, said inner blanket assemblies located proximate the center of said core and also positioned to form a plurality of separate blanket assembly rows which are radially spaced from one another and also from said radial blanket assemblies and are generally concentric with respect to the center of said core, said radial blanket assemblies comprising inner and outer contiguous rows of individual blanket assemblies positioned proximate the periphery of said core, and additional contiguous blanket assembly row positioned partially about said outer radial blanket assembly row, said fuel assemblies comprising a plurality of separate fuel assembly rows positioned intermediate said spaced blanket assembly rows, and said reactor being periodically refueled at the termination of predetermined periods of reactor operation, said method comprising moving said blanket assemblies in accordance with the following schedule:

prior to blanket assembly movement during refueling, approximately one-half of said inner blanket assemblies having been operated as inner blanket assemblies for one of said predetermined periods of reactor operation and approximately one-half of said inner blanket assemblies having been operated as inner blanket assemblies for two of said predetermined periods of reactor operation, and during refueling performing the following operations:

replacing with fresh blanket assemblies substantially all of said inner blanket assemblies which have been operated for one of said predetermined periods of reactor operation;

moving substantially all of said inner blanket assemblies which have been operated for one of said predetermined periods of reactor operation to replace substantially all of said inner blanket assemblies which have been operated for two of said predetermined periods of reactor operation;

moving substantially all of said inner blanket assemblies which have been operated as inner blanket assemblies for two of said predetermined periods of reactor operation to replace blanket assemblies in said inner radial blanket assembly row;

moving substantially all of said blanket assemblies which are replaced from said inner radial blanket assembly row to replace blanket assemblies in said outer radial blanket assembly row;

moving blanket assemblies which are replaced in said outer radial blanket assembly row to replace assemblies in said additional contiguous blanket assembly row; and

repeating the foregoing blanket assembly movements in subsequent refuelings, whereby the substantial majority of said blanket assemblies are initially operated in inner blanket assembly positions for one of said predetermined periods of reactor operation and are subsequently operated in different inner blanket assembly positions for an additional one of said predetermined periods of reactor operation after which they are operated in inner radial blanket assembly positions for one of said predetermined periods of reactor operation after which they are operated in outer radial blanket assembly positions for one of said predetermined periods of reactor operation after which they are operated in positions in said additional outer assembly row for one of said predetermined periods of reactor operation.

15. The method of moving blanket and fuel assemblies during refueling in a heterogeneous-type core for a liquid-metal-cooled fast-breeder nuclear reactor to improve the performance thereof, said core comprising a plurality of fissile-material-containing fuel assemblies and a plurality of fertile-material-containing blanket assemblies, said blanket assemblies including a plurality of inner blanket assemblies positioned in predetermined different locations within the interior of said core and radial blanket assemblies positioned proximate the periphery of said core, said inner blanket assemblies located proximate the center of said core and also positioned to form a plurality of separate blanket assembly rows which are radially spaced from one another and also from said radial blanket assemblies and are generally concentric with respect to the center of said core, said radial blanket assemblies comprising inner and outer contiguous rows of individual blanket assemblies positioned proximate the periphery of said core, said fuel

assemblies comprising a plurality of separate fuel assembly rows positioned intermediate said spaced blanket assembly rows, and said reactor being periodically refueled at the termination of predetermined periods of reactor operation, said method comprising moving said blanket and fuel assemblies in accordance with the following schedule:

prior to blanket and fuel assembly movement during refueling, approximately one-half of said inner blanket assemblies having been operated as inner blanket assemblies for one of said predetermined periods of reactor operation and approximately one-half of said inner blanket assemblies having been operated as inner blanket assemblies for two of said predetermined periods of reactor operation, approximately one-half of said fuel assemblies having been operated for one of said predetermined periods of reactor operation and approximately one-half of said fuel assemblies having been operated for two of said predetermined periods of reactor operation, and during refueling performing the following operations:

replacing approximately one-half of all of said inner blanket assemblies with fresh blanket assemblies;

moving blanket assemblies which have been operated as inner blanket assemblies for one of said predetermined periods of reactor operation to replace substantially all of those of said inner blanket assemblies which are not replaced with fresh blanket assemblies;

replacing with fresh fuel assemblies those of said fuel assemblies which have been operated for two of said predetermined periods of reactor operation with substantially all of said fresh fuel assemblies positioned proximate those of said replaced blanket assemblies which have been operated for one of said predetermined periods of reactor operation to minimize the temperature gradients therebetween, and substantially all of said fuel assemblies which have been operated for one of said predetermined periods of reactor operation and are not replaced being positioned proximate said fresh inner blanket assemblies to minimize the temperature gradients therebetween;

moving substantially all of said inner blanket assemblies which have been operated as inner blanket assemblies for two of said predetermined periods of reactor operation to replace blanket assemblies in said inner radial blanket assembly row;

moving substantially all of said blanket assemblies which are replaced from said inner radial blanket assembly row to replace blanket assemblies in said outer radial blanket assembly row; and

repeating the foregoing blanket and fuel assembly movements in subsequent refuelings.

4,584,168

SYSTEM FOR CONTROLLING DESTRUCTIVE VIBRATION OF A NUCLEAR CONTROL ROD

Frank J. Formanek, West Suffield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 14, 1983, Ser. No. 551,250
Int. Cl.[4] G21C *1/01*
U.S. Cl. 376—353 **4 Claims**

1. A nuclear control rod system having control rods and means for controlling the transverse vibration of the control rods, comprising,

a guide tube aligned axially below a reciprocable control rod while the rod is in its stored position,

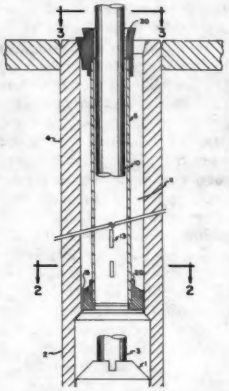
a tube sheet tube in the form of a cylinder mounted on the upper discharge end of the guide tube and axially oriented with the guide tube,

means for controlling the flow of liquid coolant up into the lower end of the guide tube for discharge from the upper end of the guide tube,

a bypass tube mounted concentrically within the tube sheet tube and receiving the control rod therein,

mounting structure between the lower end of the bypass tube and the tube sheet tube formed and arranged to provide a first path for a first portion of coolant discharged from the guide tube into the annular space between the bypass tube and the tube sheet tube and a second flow path for a second portion of coolant in the annular space between the control rod and the bypass tube,

and an upper attachment between the upper portion of the bypass tube and the tube sheet tube formed and arranged to provide for coolant discharge passages from the upper end of the tube sheet tube,



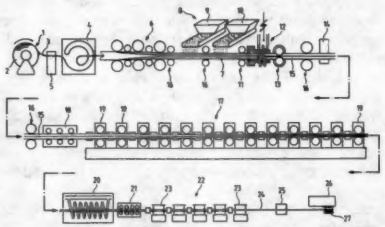
whereby any turbulence in the first portion of the coolant is isolated from direct contact with the control rod and the bypass tube mechanically limits the transverse vibration of the control rod to avoid destructive contact between the lower end of the control rod and the guide tube while the rod is in the stored position.

4,584,169

PROCESS, APPARATUS AND INSTALLATION FOR THE CONTINUOUS PRODUCTION OF A FILLER WIRE

Alexander Werner, Glattbrugg, and Heinz Pfenninger, Volketswil, both of Switzerland, assignors to Schweissindustrie Oerlikon Bührle AG, Zurich, Switzerland

Filed Apr. 17, 1985, Ser. No. 724,066
Claims priority, application European Pat. Off., Apr. 18, 1984, 84104385.4
Int. Cl.[4] B22F *5/00*
U.S. Cl. 419—3 **15 Claims**



1. A process for the continuous production of a welded or seamed filler wire of random length formed from a metal tube and a pulverulent material filling which comprises providing a metal strip, shaping the metal strip to form a trough having a longitudinal opening at the top, advancing said trough, introducing pulverulent material into said longitudinal opening during its advance, forming a filled tube by compression and welding or seaming the longitudinal edges into a tube enclosing said pulverulent material filling, reducing the formed tube to a smaller diameter thereby forming the filler wire, wherein during the welding or seaming of the tube, the air flows occurring in the open trough and in the closed, formed tube are drawn off in the vicinity of the welding or seaming zones.

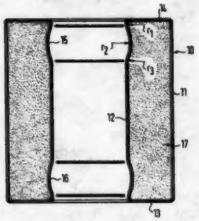
4,584,170

METHOD OF MAKING PIPES BY POWDER METALLURGY AND PIPE BLANKS (SEMI-FINISHED PRODUCTS) MADE IN ACCORDANCE THEREWITH

Christer Aslund, Bruksgränd 14, and Claes Tornberg, Staltappargatan 27, both of S-64400 Torshälla, Sweden

Filed Nov. 5, 1984, Ser. No. 668,295
Int. Cl.[4] B22F 7/00
U.S. Cl. 419—5 8 Claims

1. A method of making pipes by powder metallurgy, in which powder of metal and/or metal alloys is filled into a thin-walled casing consisting of an inner pipe wall and an outer pipe wall and a bottom and wherein the casing is closed on the side remote from said bottom by means of an annular cover and is subjected to a cold-isostatic pressure, thereby producing a



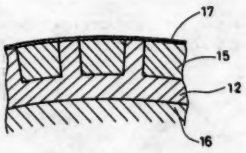
solid or dimensionally stable pipe blank which is then hot-worked such as being extruded while being heated, comprising a step prior to hot-working of forming the inner pipe at least in one end region with a least one circumferentially extending bulge (**15** and **16**, respectively), and thereafter hot-working of said blank with said bulge.

4,584,171

METHOD OF PRODUCING ROCKET COMBUSTORS

Masayuki Niino, Sendai; Nobuyuki Yatsuyanagi, Shibata; Akinaga Kumakawa, Souma; Akio Suzuki, Shibata; Masaki Sasaki, Shibata; Hiromi Gomi, Shibata; Hiroshi Sakamoto, Shibata; Yoshimichi Masuda, No. 110, 1 Midorigahama 9-chome, Chigasaki-shi, Kanagawa-ken; Ryuzo Watanabe, 15-12 Dainohara 3-chome, Sendai-shi, Miyagi-ken; Junjiro Takekawa, 25-1, Yumino-machi, Sendai-shi, Miyagi-ken; Yoshihiko Doi, Itami; Nobuhito Kuroishi, Itami; Yoshinobu Takeda, Itami, and Shigeki Ochi, Itami, all of Japan, assignors to National Aerospace Laboratories of Science & Technology Agency; Yoshimichi Masuda; Ryuzo Watanabe; Junjiro Takekawa and Sumitomo Electric Industries, all of, Japan

Filed Sep. 21, 1984, Ser. No. 653,012
Claims priority, application Japan, Oct. 7, 1983, 58-188805
Int. Cl.[4] B22F 7/00
U.S. Cl. 419—8 9 Claims



1. A method of producing rocket combustors comprising the steps of:

preparing a cylinder provided on its outer periphery with a cooling wall of channel construction having a plurality of grooves,

filling said grooves of the cylinder with a low-melting alloy,

compression molding a metal powder to a predetermined thickness around the periphery of the cylinder filled with said low-melting alloy so as to form an outer cylinder, and

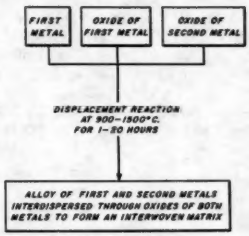
sintering the same after said compression molding.

4,584,172

METHOD OF MAKING COMPOSITION SUITABLE FOR USE AS INERT ELECTRODE HAVING GOOD ELECTRICAL CONDUCTIVITY AND MECHANICAL PROPERTIES

Siba P. Ray, Pittsburgh, Pa., and Robert A. Rapp, Columbus, Ohio, assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 423,673, Sep. 27, 1982, Pat. No. 4,454,015.
This application May 3, 1984, Ser. No. 596,020
Int. Cl.[4] B22F 3/16; C22C 38/08
U.S. Cl. 419—34 25 Claims


FIRST METAL
OXIDE OF FIRST METAL
OXIDE OF SECOND METAL
DISPLACEMENT REACTION AT 900–1500°C. FOR 1–50 HOURS
ALLOY OF FIRST AND SECOND METALS INTERDISPERSED THROUGH OXIDES OF BOTH METALS TO FORM AN INTERWOVEN MATRIX

1. A process for the production of an inert electrode composition for use in the production of metal by the electrolytic reduction of a metal compound which comprises: reacting at least one preselected metal compound powder and at least one other reactant powder selected from the class consisting of a metal and a metal compound, said preselected metal compound and said other reactant being capable of reacting by a displacement reaction to form from 5 to 50 vol. % of an alloy of a metal in said other reactant with another metal present in said preselected metal compound, or a free metal, with the balance consisting of one or more metal compounds, said alloy or free metal being dispersed through said one or more metal compounds formed in said displacement reaction in an interwoven matrix whereby an inert electrode made from said composition is characterized by enhanced conductivity and mechanical strength.

4,584,173

ALUMINIUM ALLOYS

Alan Gray, Amersham, and William S. Miller, Maidstone, both of England, assignors to Alcan International Limited, Montreal, Canada

Filed Oct. 9, 1984, Ser. No. 658,905
Claims priority, application United Kingdom, Oct. 12, 1983, 8327286
Int. Cl.[4] C22C 21/00
U.S. Cl. 420—533 5 Claims

1. An aluminium base alloy having a composition consisting essentially of the following ranges in weight percent:

Lithium	2.1–2.9
Magnesium	3.0–5.5
Copper	0.2–0.7 and

one or more constituents selected from the group consisting of Zirconium, Hafnium and Niobium as follows:

Zirconium	0.05–0.25
Hafnium	0.10–0.50
Niobium	0.05–0.30 and
Zinc	0–2.0
Titanium	0–0.5
Manganese	0–0.5
Nickel	0–0.5

-continued

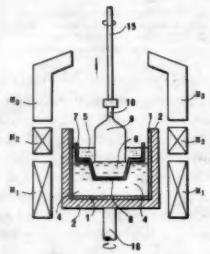
Chromium	0–0.5
Germanium	0–0.2
Aluminium	Remainder (apart from incidental impurities).

4,584,174

SINGLE CRYSTAL OF COMPOUND SEMICONDUCTOR OF GROUPS III-V WITH LOW DISLOCATION DENSITY

Mikio Morioka, and Atsushi Shimizu, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 21, 1985, Ser. No. 704,027
Claims priority, application Japan, Feb. 23, 1984, 59-34560
Int. Cl.[4] H01L 29/20; C22C 12/00
U.S. Cl. 420—555 7 Claims



1. Single crystal of compound semi-conductor of groups III–V with low dislocation density, characterized in that the host crystal of compound semiconductor of groups III–V are doped with at least one isoelectronic under-impurity and at least one isoelectronic over-impurity, arithmetic average of bond length "$\bar{a}$" and the standard bond length "a_0" between host atoms satisfy the inequality

$$-0.02 \leqq \frac{\bar{a} - a_0}{a_0} \leqq 0.02$$

where the arithmetic average "$\bar{a}$" of bond length is defined by

$$\bar{a} = \frac{\Sigma a_1 x_1 + \Sigma a_2 x_2}{\Sigma x_1 + \Sigma x_2}$$

where "a_1" is a tetrahedral covalent bond length between the isoelectronic under-impurity and the host atom in a two-component crystal consisting of elements same with the impurity atom and the host atom, "x_1" is an impurity concentration of the isoelectronic under-impurity, "a_2" is a tetrahedral covalent bond length between the isoelectronic over-impurity and the host atom in a two-component crystal consisting of elements same with the impurity atom and the host atom, "x_2" is and impurity concentration of the isoelectronic over-impurity, and Σ signifies to sum up the succeeding values with regard to all under- or over-isoelectronic impurities if more than one impurities are doped, and the total concentration of isoelectronic impurity satisfies the inequality

$$\Sigma x_1 + \Sigma x_2 \geqq 10^8 \text{ atoms/cm}^3.$$

4,584,175

CORROSION INHIBITING METHOD AND PLASTIC SHEET MATERIAL THEREFOR

Irvin W. Martenson, 782 Shadow Grove Blvd., Brea, Calif. 92670

Continuation-in-part of Ser. No. 217,175, Dec. 16, 1980, Pat. No. 4,448,916. This application May 14, 1984, Ser. No. 609,636
Int. Cl.[4] C23F 11/00, 11/02
U.S. Cl. 422—9 14 Claims

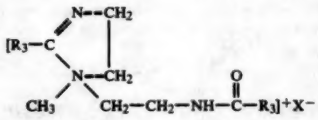
1. A method for the inhibition of corrosion of ferrous metals which comprises: placing an object formed of a ferrous metal in a closed container in the presence of a thermoplastic resin containing an effective amount, from about 0.1 to about 8 weight percent of a corrosion inhibitor additive comprising the following:

(a) a fatty hydroxyl amine in an amount constituting from about 70 to 90 percent of the additive and having the following formula:

$$(OHR_1)_n—NH_{(2-n)}—R_2$$

wherein:
R_1 is a C_1 to C_8 alkylene;
R_2 is a C_{10} to C_{22} aliphatic group; and
n is 1 or 2;

(b) a fatty imidazolinium quaternary in an amount from 10 to about 30 percent of the additive and having the following formula:



wherein:
R_3 is a C_{10} to C_{22} aliphatic group; and
X is C_1 to C_5 alkyl sulfate.

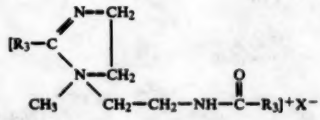
10. A thermoplastic resin having uniformly dispersed therein from 0.1 to about 8 weight percent of metal corrosion inhibitor additives consisting essentially of:

(a) a fatty hydroxyl amine in an amount constituting from about 70 to 90 percent of the additive and having the following formula:

$$(OHR_1)_n—NH_{(2-n)}—R_2$$

wherein:
R_1 is a C_1 to C_8 alkylene:
R_2 is a C_{10} to C_{22} aliphatic group; and
n is 1 or 2;

(b) a fatty imidazolinium quaternary in an amount from 10 to about 30 percent of the additive and having the following formula:



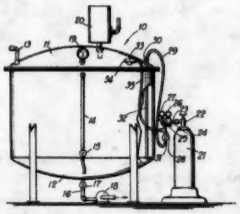
wherein:
R_3 is a C_{10} to C_{22} aliphatic group; and
X is C_1 to C_5 alkyl sulfate; and

(c) from 1 to about 5 percent of a non-fugitive organic anti-oxidant.

4,584,176
METHOD AND APPARATUS FOR STORING BICARBONATE DIALYSATE

James C. Oliver, 3989 Garfield Rd., Stone Mountain, Ga. 30083, and Carl W. Oettinger, 747 Houston Mill Rd. NE., Atlanta, Ga. 30329

Filed Mar. 19, 1984, Ser. No. 591,280
Int. Cl.[4] F17C 5/00
U.S. Cl. 422—41 1 Claim

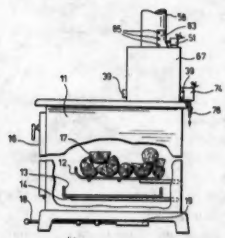


1. A method of storing liquefied bicarbonate dialysate comprising the steps of placing a quantity of liquefied bicarbonate dialysate in a hermetically sealed storage vessel, blanketing the liquefied bicarbonate dialysate with CO_2 gas in the storage vessel, and maintaining a substantially constant atmospheric pressure in the storage vessel at the gas/liquid surface interface throughout a relatively long term storage interval and the preliminary steps of purging the storage vessel of air by displacing the air with CO_2 gas for several minutes, and transferring liquefied bicarbonate dialysate into the purged storage vessel and then sealing all entry points to the storage vessel.

4,584,177
CATALYTIC UNIT FOR GAS PHASE CATALYSIS, MORE ESPECIALLY FOR USE WITH WOOD- AND OTHER SOLID FUEL-BURNING STOVES

Erwin A. Fernbach, 112 Talbot Road, Willowdale, Ontario, Canada (M2M 4A4), and Robert A. Guerriere, 5 Charnwood Place, Thornhill, Ontario, Canada (L3T 5H2)

Continuation of Ser. No. 381,539, May 24, 1982, abandoned. This application Dec. 4, 1984, Ser. No. 677,339
Int. Cl.[4] B01J 9/04
U.S. Cl. 422—115 14 Claims

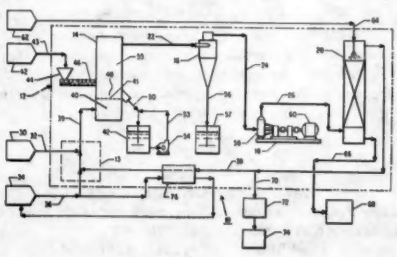


1. In combination: a solid fuel burning stove having a firebox and a flue aperture; a heat exchanger jacket connected to the flue aperture and having a tubular inner wall and a tubular outer wall spaced outwardly therefrom and defining an air space therewith; a catalytic combustor unit disposed in the heat exchanger jacket comprising means for maintaining approximately true pyrolysis in the firebox, including a first catalytic unit and a second catalytic unit spaced longitudinally downstream from the first unit and defining therewith a chamber bounded by an intermediate portion of the inner wall of the heat exchanger jacket, each catalytic unit comprising longitudinally extending walls defining a multitude of small tubular flow passages extending generally longitudinally of the heat exchanger jacket and supporting a catalyst for promoting cracking of hydrocarbons and combustion of carbon monoxide and carbon particles, an air inlet conduit communicating between the surroundings and the air space in the heat exchanger jacket, for introducing secondary combustion air into the air space; and air inlet ports through said portion of the inner wall of the heat exchanger jacket, the ports directing the secondary combustion air non-radially into said chamber, whereby a vortex is created within the chamber to promote homogeneous mixing of the secondary combustion air with the gases passing through the combustor unit; means for efficient warming of said catalytic units to operating temperature comprising each catalytic unit being generally annular in shape and having its outer surface in heat exchange contact with the inner wall of the heat exchanger jacket and its inner surface defining a central gas bypass opening, a valve member associated with each bypass opening, temperature responsive control means responsive to the temperature of gas issuing from the combustor unit and moving each valve member toward a position fully closing each bypass opening when the temperature exceeds a predetermined limit and moving each valve member toward a position relatively opening each bypass opening when the temperature falls below a predetermined limit; means providing adequate residence of gases in said second unit comprising said second unit having its tubular flow passages substantially longer than the flow passages of the first unit; a casing surrounding the heat exchanger jacket, for receiving hot gases issuing from the second catalytic unit, and having an outlet to a stack; and a baffle disposed in the casing between its outlet and the second catalytic unit, the baffle directing said hot gases in heat exchange relationship over the outer side of the outer wall of the heat exchanger jacket.

4,584,178
APPARATUS FOR THE MANUFACTURE OF HYPOCHLOROUS ACID

Robert E. Yant, Medina, and Richard J. Galluch, Hudson, both of Ohio, assignors to Quantum Technologies, Inc., Twinsburg, Ohio

Filed Nov. 16, 1984, Ser. No. 672,141
Int. Cl.[4] B01J 8/18
U.S. Cl. 422—140 12 Claims



1. An apparatus for generating hypochlorous acid vapor from gaseous chlorine and steam comprising:

(a) reactor means for reacting chlorine with steam to produce a gaseous admixture including hypochlorous acid and hydrochloric acid;

(b) supply means for supplying chlorine and steam connected to said reactor means;

(c) a bed comprising a chloride forming base, and

(d) means for delivering said gaseous admixture to said bed so that said gaseous admixture contacts said chloride forming base to produce a solid-gas reaction stripping the hydrochloric acid vapor by conversion to a chloride salt

thereby forming a stripped reactant stream of hypochlorous acid vapor.

4,584,179

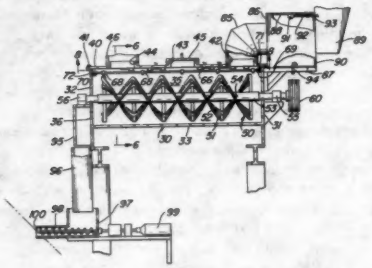
APPARATUS FOR TREATING CEMENT KILN DUST

Ramon Galli, 120 Newport St., Nanticoke, Pa. 18634

Filed May 18, 1984, Ser. No. 611,619

Int. Cl.[4] B01J *8/00*

U.S. Cl. 422—187 **9 Claims**



1. Apparatus for treating cement kiln dust comprising an elongate reaction chamber, kiln dust entry means in said reaction chamber, atomized-spray nozzles in said reaction chamber for introducing atomized spray to kiln dust, separate conduits for liquid and gas separately connected to said atomized-spray nozzles for atomizing liquid by gas to form a fog of the liquid in an atmosphere of the gas, mixing means in said reaction chamber for mixing the kiln dust in contact with the fog and gaseous atmosphere of the reaction chamber, discharge means at one end of said reaction chamber for discharging the mixed and contacted kiln dust product from the reaction chamber, said kiln dust entry means being located in an upper region of said reaction chamber for depositing kiln dust gravitationally to a lower region of said reaction chamber, said atomized-spray nozzles being located in said upper region of said reaction chamber for depositing fog on kiln dust during mixing thereof, gas entry means on said reaction chamber for delivering gas to said reaction chamber for reaction with kiln dust and fog, gas exit means on said reaction chamber for discharging gas products from said reaction chamber, said gas entry and exit means being at opposite ends of said reaction chamber, and pre-entry liquid atomizing spray means in said gas entry means for treating gas by atomized liquid spray to effectively saturate the gas before delivery to said reaction chamber.

4,584,180

GAS INJECTION APPARATUS

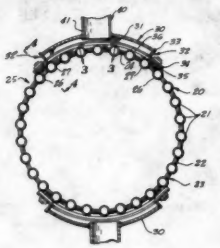
Anatoly A. Ostrov, Windsor, Conn., assignor to Cool Water Coal Gasification Program, Daggett, Calif.

Filed May 21, 1984, Ser. No. 612,549

Int. Cl.[4] B01F *5/06;* **F22B** *7/04;* **F27D** *15/02;* **F28D** *21/00*

U.S. Cl. 422—207 **11 Claims**

1. A gas injection apparatus in combination with a lined vessel wherein said lined vessel includes a vessel wall and an inner liner, said inner liner comprising a series of parallel tubes radially joined together by web members, said inner liner being spaced apart from the vessel wall and having an inner surface and an outer surface, said gas injection apparatus comprising at least one plenum assembly sealably attached to the outer surface of the inner liner; the inner liner having openings positioned and arranged to provide communication between the interior of the vessel and the area defined by said plenum assembly and the inner liner for injection of gas into the interior of said vessel perpendicularly to the plane of the inner liner; said gas injection apparatus further comprising an expansible supply duct attached to and extending between the vessel wall and said plenum assembly.



4,584,181

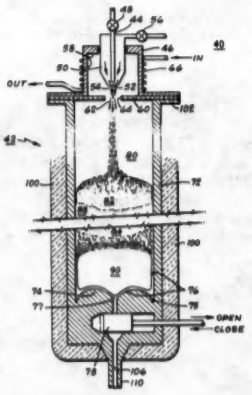
PROCESS AND APPARATUS FOR OBTAINING SILICON FROM FLUOSILICIC ACID

Leonard Nanis, Palo Alto, and Angel Sanjurjo, San Jose, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Dec. 27, 1982, Ser. No. 453,337

Int. Cl.[4] B01J *12/02;* **C01B** *33/02*

U.S. Cl. 422—241 **6 Claims**



1. A reaction chamber for producing low cost, high purity, solar grade silicon and other reaction products by reaction of gaseous silicon tetrafluoride with sodium in substantially stoichiometric quantities to produce a reaction product from which silicon is recovered by melt separation and wherein said fluoride gas used in the reaction is obtained by thermal decomposition of sodium fluosilicate which is precipitated from aqueous fluosilicic acid generated from phosphate rock conversion to fertilizer, said reaction chamber including a top wall having a first inlet means for introducing liquid sodium and a second inlet means, surrounding said first inlet means, for introducing gaseous silicon tetrafluoride, a cylindrical wall portion and a bottom portion, said wall and bottom portions being formed of graphite which is preferentially wetted by said other reaction products, said bottom portion having one or more drainage ports therethrough of a size to prevent passage of molten silicon but to allow passage of said other reaction products, and said bottom portion being configured with one or more bottom surface drainage channels of sufficient cross section to facilitate the free flow of essentially all reaction products other

than silicon toward said one or more bottom drainage ports, said passage of said other reaction products through said drainage ports being due to the low surface tension of said other reaction products as compared to that of silicon, whereby separation of said other reaction products from the silicon is provided by said reaction chamber bottom.

4,584,182

STERILIZED STORAGE CONTAINER

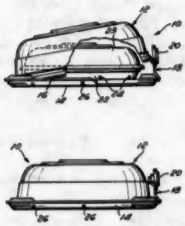
Roger S. Sanderson, 24772 Santa Clara, Dana Point, Calif. 92629, and Robert C. Whelchel, Newport Beach, Calif., assignors to Roger S. Sanderson, Dana Point, Calif.

Continuation of Ser. No. 328,701, Dec. 8, 1981, Pat. No. 4,372,921, which is a continuation of Ser. No. 115,678, Jan. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 895,239, Apr. 10, 1978, Pat. No. 4,247,517, which is a continuation-in-part of Ser. No. 821,042, Aug. 1, 1977, Pat. No. 4,251,482, which is a continuation-in-part of Ser. No. 734,228, Oct. 20, 1976, abandoned, said Ser. No. 734,228, is a continuation of Ser. No. 703,044, Jul. 6, 1976, Pat. No. 4,196,166, which is a continuation-in-part of Ser. No. 640,824, Dec. 15, 1975, abandoned. This application Sep. 30, 1982, Ser. No. 431,380

The portion of the term of this patent subsequent to Apr. 17, 1996, has been disclaimed.

Int. Cl.[4] A61L *2/00, 2/06*

U.S. Cl. 422—310 **28 Claims**



1. An apparatus for containing items while the items are being sterilized and stored, said apparatus comprising:

a container formed by a lid and a base;

a support means selectively positioning said lid in an open position, wherein said lid is partially spaced from said base, or in a closed position relative to said base, said support means including a relatively stiff, plate-like member supported on a peripheral portion of said base, said member including a supporting portion which extends toward said lid so that when the lid is in said open position it rests on said support portion; and

means attached to said member forming an expandable chamber for containing a fluid, said chamber positioned on said member so that expansion of said chamber urges said support portion away from said lid, when said lid is in said open position, to enable said lid to move to said closed position on said base, whereby said lid may be manually moved from its closed position to its open position in which it is supported by said support portion.

4,584,183

PROCESS FOR SEPARATING ZIRCONIUM ISOTOPES

Peter T. Chiang, Monroeville; Edward J. Lahoda, Edgewood, and Herbert A. Burgman, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

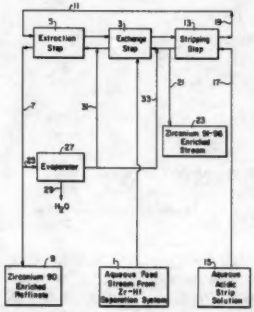
Filed Dec. 21, 1983, Ser. No. 564,055

Int. Cl.[4] C01G *25/00*; B01D *59/00*

U.S. Cl. 423—2 **19 Claims**

1. A method of separating a feed stream consisting essentially of an aqueous solution of a mixture of ^{90}Zr and ^{91} *to* ^{96}Zr salts selected from group consisting of thiocyanate, nitrate, sulfate, chloride, perchlorate, and mixtures thereof, into two aqueous product streams, each containing both a ^{90}Zr isotopic portion and a ^{91} *to* ^{96}Zr isotopic portion, but in different ratios, comprising

(A) contacting said feed stream with methylisobutyl ketone or an organic water-immiscible solvent containing an extractant medium selected from the group consisting of quaternary ammonium salts, organic phosphonates, organic phosphinates, organic phosphates, organic sulfonates, primary amines, tertiary amines, polyethers, betadiketones, and mixtures thereof, that preferentially extracts one of said isotopic portions, leaving an aqueous raffinate depleted in that isotopic portions and enriched in the other isotopic portion;



(B) stripping said organic solvent of its zirconium with an aqueous acidic strip medium to produce a first aqueous product stream;

(C) recycling said stripped organic solvent to step (A);

(D) evaporating water from a portion of said aqueous raffinate to produce a concentrated aqueous raffinate and a second aqueous product stream; and

(E) recycling said concentrated aqueous raffinate to said feed stream.

4,584,184

SEPARATION AND RECOVERY OF MOLYBDENUM VALUES FROM URANIUM PROCESS WASTE

David Nalewajek, West Seneca; Lynn E. McCurry, Hamburg; David J. Friedland, Snyder, and Richard E. Elbeck, Orchard Park, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 21, 1984, Ser. No. 612,282

Int. Cl.[4] C01G *43/01, 39/02*

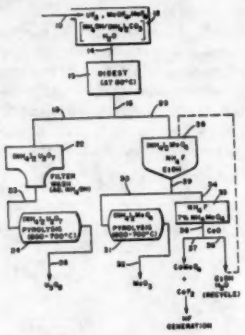
U.S. Cl. 423—15 **3 Claims**

1. A method of recovering molybdenum and uranium values from a process waste generated from the production of nuclear grade uranium hexafluoride comprising the steps of

(a) hydrolysing the process waste which contains UF_6, MoF_6 and $MoOf_4$ in an aqueous solution containing ammonium carbonate and ammonium hydroxide thereby forming ammonium uranyl carbonate;

(b) digesting while maintaining a pH above 9, the resulting mother liquor at a temperature of about 60°–80° C. to

evolve CO_2 and convert the ammonium uranyl carbonate to solid ammonium diuranate;



(c) filtering, washing and drying the solid ammonium diuranate.

4,584,185

RECOVERY OF TUNGSTEN AND RHENIUM

Alan D. Douglas, and Kenneth T. Reilly, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 22, 1985, Ser. No. 768,252
Int. Cl.[4] C01G 41/00, 47/00
U.S. Cl. 423—49 5 Claims

1. A process for recovering tungsten and rhenium from a alkali tungstate and perrhenate bearing solution, said process comprising:

(a) adding sufficient hydrochloric acid to said solution to form a first precipitate containing essentially all of the tungsten as tungstic acid and a first mother liquor having an acid concentration of at least about 1.25 normal, said first mother liquor containing the major portion of the rhenium;

(b) separating said first precpitate from said first mother liquor;

(c) adding a source of sulfide ions to said first mother liquor, with agitation for a sufficient time and with the amount of said sulfide ions being sufficient to form a second precipitate containing essentially all of the rhenium as rhenium heptasulfide which was in said first mother liquor, and a second mother liquor; and

(d) separating said second precipitate from said second mother liquor.

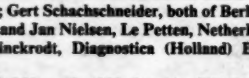
4,584,186

RADIOLABELLED METALLOCENE DERIVATIVES

Martin Wenzel; Gert Schachschneider, both of Berlin, Fed. Rep. of Germany, and Jan Nielsen, Le Petten, Netherlands, assignors to Mallinckrodt, Diagnostica (Holland) B.V., Betten, Netherlands

Filed Nov. 22, 1983, Ser. No. 554,495
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1982, 3244886
Int. Cl.[4] A61K 29/00, 49/00
U.S. Cl. 424—1.1 26 Claims

1. Radiolabelled metallocene derivatives of the general formula



wherein

Mc is a metallocenyl group with a radioactive central atom,

R is a carbonyl or methylene group,

R_1 is a hydrogen atom or an alkyl group having 1–4 carbon atoms,

A is a carboxy group or a pharmaceutically acceptable salt thereof, or an alkoxycarbonyl or alkanoyl group having 2–5 carbon atoms, and

n is 1–4.

4,584,187

IMAGING AGENT AND METHOD OF USE

Donald M. Wieland, 1204 Linwood, Ann Arbor, Mich. 48103; Lawrence E. Brown, 523 Thomas St., Ypsilanti, Mich. 48197; William H. Beierwaltes, 1025 Forest Rd., Ann Arbor, Mich. 48105, and Jiann-long Wu, 2672 Velvet Way, Walnut Creek, Calif. 94596

Filed Apr. 1, 1981, Ser. No. 250,059
Int. Cl.[4] A61K 43/00, 49/00
U.S. Cl. 424—1.1 21 Claims

1. A radioiodinated compound I-metaiodobenzylguanidine wherein I is an isotope selected from I^{123} and I^{131}.

4,584,188

HYDROGELS

Neil B. Graham, Bearsden, Scotland, assignor to Nationale Research Development Corporation, London, England

Division of Ser. No. 569,263, Jan. 9, 1984, which is a division of Ser. No. 387,817, Jun. 14, 1982, Pat. No. 4,438,258. This application Dec. 3, 1984, Ser. No. 677,473
Claims priority, application United Kingdom, Jun. 12, 1981, 8118088; Jun. 12, 1981, 8118089; Jun. 12, 1981, 8118090
Int. Cl.[4] A01N 25/26; A61J 3/00
U.S. Cl. 424—19 12 Claims

1. A controlled release composition which comprises:

(a) an active substance, and

(b) a carrier therefor comprising a hydrogel comprising polymerised moieties derivable from (i) at least one polymerisable cyclic (thio)ether and (ii) at least one hydrophilic homo- or copolymer.

4,584,189

BACTERICIDAL TOOTHPASTES

Dianne P. Leipold, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sep. 28, 1984, Ser. No. 655,836
The portion of the term of this patent subsequent to Nov. 27, 2001, has been disclaimed.
Int. Cl.[4] A61K 7/16, 7/22
U.S. Cl. 424—54 9 Claims

1. In a dentifrice composition having water, a cationic bactericidal agent, a finely divided dental abrasive, and a thickener, the improvement which comprises as the thickener at least about 0.1% by weight of a hydrophobically modified hydroxyethyl cellulose which is hydrophobically modified with a hydrocarbon radical having 8 to 25 carbon atoms in an amount from about 0.1 to about 2.0% and has a hydroxyethyl M.S. of from about 2.5 to about 3.5.

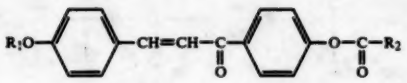
4,584,190

NOVEL CHALCONE DERIVATIVES AND ULTRAVIOLET ABSORBERS COMPRISING THE SAME

Tohru Tejima, Tochigi; Koichi Nakamura, Ichikaimachi; Michihiro Hattori, Utsunomiya; Shinichi Masuda, Wakayama; Genji Imokawa, and Naotake Takaishi, both of Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 9, 1984, Ser. No. 669,888
Claims priority, application Japan, Nov. 17, 1983, 58-216913
Int. Cl.[4] A61K 7/42; C07C 69/017
U.S. Cl. 424—59 6 Claims

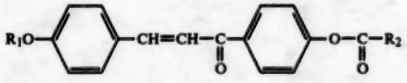
1. A chalcone compound of the formula (I)



(I)

in which R_1 represents a hydrogen atom or a methyl group, and R_2 represents a linear or branched aliphatic hydrocarbon group having from 7 to 24 carbon atoms.

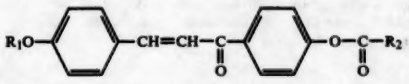
2. An ultraviolet absorbing composition comprising an effective amount of a chalcone compound of the formula (I)



(I)

in which R_1 represents a hydrogen atom or a methyl group, and R_2 represents a linear or branched aliphatic hydrocarbon group having from 7 to 24 carbon atoms.

3. An ultraviolet absorbing composition absorbing both UV-A and UV-B radiation which comprises an effective amount of a chalcone compound of the formula (I)



(I)

which absorbs UV-A radiation, in which R_1 represents a hydrogen atom or a methyl group, and R_2 represents a linear or branched aliphatic hydrocarbon group having from 2 to 24 carbon atoms, and an effective amount of a UV-B radiation absorbing compound.

4,584,191

HAIR CARE AND SKIN CARE COMPOSITIONS CONTAINING BIOTIN ETHYL ESTER

Hans U. Hostettler, Arlesheim, and Bruno Ponciosi, Muttenz, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 2, 1982, Ser. No. 446,116

Claims priority, application Switzerland, Dec. 10, 1981, 7897/81

Int. Cl.⁴ A61K *7/075, 7/06, 7/48*

U.S. Cl. 424—70 **5 Claims**

1. A cosmetic composition in the form of a hair lotion comprising from about 0.01% to about 5.0% by weight of biotin ethyl ester in combination with a compatible carrier material.

4. A method for the care of the hair which method comprises applying an effective amount of the cosmetic composition according to claim 1 to the hair.

4,584,192

FILM-FORMING COMPOSITION CONTAINING AN ANTIMICROBIAL AGENT AND METHODS OF USE

John D. Dell, St. Paul, and Milton H. Andrus, Jr., White Bear Lake, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jun. 4, 1984, Ser. No. 617,258

Int. Cl.⁴ A61F *31/78*

U.S. Cl. 424—81 **26 Claims**

1. A film-forming composition, comprising:

(a) a film-forming copolymer consisting essentially of copolymerized A, B and C monomers as follows:

A is a monomeric acrylic or methacrylic acid ester of an alkyl alcohol containing a single hydroxyl, said alcohol having from 2 to about 14 carbon atoms when said A monomer is an acrylic acid ester, and 7 to 18 carbon atoms when said A monomer is a methacrylic acid ester, the amount by weight of A monomer being about 15 to 80% of the total weight of all monomers in the copolymer;

B is a monomeric methacrylic acid ester of an alkyl alcohol containing a single hydroxyl, said alcohol having from 1 to 6 carbon atoms, the amount by weight of B monomer being about 20 to 70% of the total weight of all monomers in the copolymer; and

C is an N-vinyl lactam, the amount by weight of which being about 1 to 15% of the total weight of all monomers in the copolymer;

(b) an effective amount of a broad spectrum antimicrobial agent;

said composition being dermatologically-acceptable, and, when applied to skin from a fugitive solvent, being capable of forming a clear, substantially fluid-resistant, substantially tack-free, flexible film which adheres to skin and releases said antimicrobial agent to skin.

4,584,193

SYNTHETIC PHEROMONE 5-HYDROXY-4-METHYL-3-HEPTANONE AND ITS USE IN CONTROLLING GRAIN WEEVILS

Wendell E. Burkholder; Joel K. Phillips; Catherine A. Walgenbach, and Janet A. Klein, all of Madison, Wis., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 27, 1985, Ser. No. 716,798

Int. Cl.⁴ A01N *25/00*

U.S. Cl. 424—84 **15 Claims**

1. A method of eliciting an attractant or aggregation response in a grain weevil of the genus Sitophilus comprising applying to the locus thereof an effective amount of 5-hydroxy-4-methyl-3-heptanone.

4,584,194

INACTIVATED RABIES VACCINE FOR VETERINARY USE

Edmund P. Bass, and Richard L. Sharpee, both of Lincoln, Nebr., assignors to Norden Laboratories, Inc., Lincoln, Nebr.

Division of Ser. No. 376,905, May 10, 1982, abandoned, which is a division of Ser. No. 174,306, Jul. 30, 1980, Pat. No. 4,347,239. This application Apr. 8, 1985, Ser. No. 720,849

Int. Cl.⁴ A61K *39/205*

U.S. Cl. 424—89 **8 Claims**

1. A method of vaccinating canine animals comprising administering parenterally to said animals an inactivated rabies vaccine capable of inducing immunity in canine animals without serious side effects, the vaccine comprising a vaccinal amount of inactivated HCP-SAD strain of rabies virus which has been adapted, before inactivation, to grow in swine testicle cell culture by at least one passage therein, an adjuvant and a carrier therefor.

4,584,195

BROAD SPECTRUM VACCINE AGAINST GONORRHEA

Gary K. Schoolnik, Palo Alto, and Jonathan Rothbard, San Francisco, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jun. 21, 1984, Ser. No. 623,178

Int. Cl.⁴ A61K *39/02, 37/02;* C07K *7/00*

U.S. Cl. 424—92 **14 Claims**

1. A vaccine protective against gonorrhea which comprises an effectively protective amount of a peptide having an amino acid sequence that corresponds to residues 41-50 inclusive of *N. gonorrhoeae* MS11 (Tr) pilin, wherein said peptide optionally further contains a Cys residue or a Gly-Cys dipeptide at its C terminus, linked to a substantially antigenically neutral carrier.

4. A vaccine protective against gonorrhea infections which comprises an effectively protective amount of a peptide having an amino acid sequence that corresponds to residues 69-84

inclusive of *N. gonorrhoeae* MS11 (Tr) pilin, wherein said peptide optionally further contains a Cys residue or a Gly-Cys dipeptide at its C terminus, linked to a substantially antigenically neutral carrier.

4,584,196

PERFLUORINATED SURFACE-ACTIVE OLIGOMERS AND COMPOSITIONS FOR TREATING HAIR CONTAINING THESE OLIGOMERS

Guy Vaalerberghe, Claye-Souilly, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

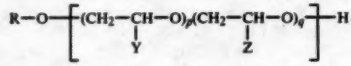
Division of Ser. No. 156,398, Jun. 4, 1980, Pat. No. 4,399,077. This application Mar. 9, 1983, Ser. No. 473,639

Claims priority, application France, Jun. 7, 1979, 79 14639

Int. Cl.[4] A61K *7/075, 7/08;* **C07C** *149/20, 141/02, 143/12, 147/14*

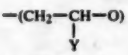
U.S. Cl. 424—70 **12 Claims**

1. A perfluorinated surface-active oligomer having the formula

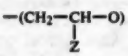


wherein

R—O— is joined to the



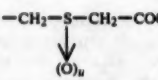
group or to the



group and wherein R represents (i) a straight or branched chain hydrofluorocarbon having 2–18 carbon atoms, (ii) a straight or branched chain hydrocarbon radical having 2–18 carbon atoms, or (iii) a mixture of (i) and (ii),

Y represents a fluorocarbon radical having 6 to 13 carbon atoms or a hydrofluorocarbon radical having 6 to 13 carbon atoms wherein the hydrocarbon moiety thereof optionally contains one chain oxygen atom,

Z represents

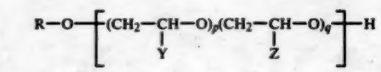


—CH_2—O—SO_3M or —CH_2—O—$COCH_2SO_3M$, wherein M represents hydrogen, alkali metal, alkaline earth metal, ammonium or a protonized amine selected from the group consisting of triethanolamine, 2-amino-2-methyl propan-1-ol and 2-amino-2-methyl propane-1,3-diol,

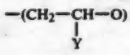
p and q, each independently, represent an integer or decimal number ranging from 0.5 to 30 and

u represents 0 or 1.

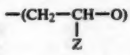
8. A shampoo, conditioning rinse or conditioning lotion composition for the hair comprising in an aqueous or aqueous-alcoholic vehicle a perfluorinated surface active oligomer in an amount effective to impart an oleofugic effect to said hair, said perfluorinated surface-active agent having the formula



wherein R—O— is joined to the



group or to the

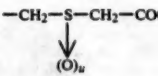


group and wherein

R represents (i) a straight or branched chain hydrofluorocarbon having 2–18 carbon atoms, (ii) a straight or branched chain hydrocarbon radical having 2–18 carbon atoms, or (iii) a mixture of (i) and (ii),

Y represents a fluorcarbon radical having 6 to 13 carbon atoms or a hydrofluorocarbon radical having 6–13 carbon atoms wherein the hydrocarbon moiety thereof optionally contains one chain oxygen atom,

Z represents



—CH_2—O—SO_3M or —CH_2—O—$COCH_2SO_3M$,

wherein M represents hydrogen, alkali metal, alkaline earth metal, ammonium or a protonized amine selected from the group consisting of triethanolamine, 2-amino-2-methyl propan-1-ol and 2-amino-2-methyl propane-1,3 diol,

p and q, each independently, represent an integer or decimal number ranging from 0.5 to 30 and

u represents 0 or 1.

4,584,197

PROCESS FOR PREPARATION OF FISH AND SHELLFISH EXTRACTS HAVING PHARMACEUTICAL FUNCTIONS

Takashi Takasaki, and Mitsunori Iwamoto, both of Karatsu, Japan, assignors to Nihon Bussan Kabushiki Kaisha, Karatsu, Japan

Filed May 6, 1983, Ser. No. 492,079

Claims priority, application Japan, Mar. 4, 1983, 58-34385

Int. Cl.[4] A61K *35/60;* **C12P** *21/00;* **C07G** *17/00*

U.S. Cl. 424—95 **3 Claims**

1. A process for the preparation of fish and/or shellfish extracts, which comprises the steps of:

(a) heating uncomminuted raw fish and/or shellfish to a temperature of not lower than 80° for 10 minutes to 1 hour to fully deactivate the autolysis enzymes contained in said fish and/or shellfish and simultaneously to remove fish smell;

(b) adding a Bacillus subtilis derived proteinase of said fish and/or shellfish at a temperature of from 50 to 60° C. and at a pH of from 6.0 to 6.5 and decomposing for a period of 1 to 3 hours the proteins contained in said fish and/or shellfish to the stage of proteoses;

(c) raising the temperature to not lower than 80° C. and maintaining at that temperature for 10 minutes to 1 hour to fully deactivate said Bacillus subtilis derived proteinase;

(d) adding a Koji mould derived proteinase to said proteoses

derived from said fish and/or shellfish at a temperature of from 40° to 50° C. and at a pH of from 6.0 to 7.0 and maintaining the mixture at said temperature for 1 to 3 hours to decompose said proteoses into peptides each having a molecular weight of substantially less than 3000 and free amino acids;

(e) raising the temperature to not lower than 75° C. to fully deactivate said Koji mould derived proteinase; and

(f) separating and then concentrating the resultant decomposition products, to produce fish and/or shellfish extracts.

4,584,198

THERAPEUTIC COMPOSITIONS HAVING ANTIBACTERIC ACTIVITY COMPRISING A FRACTION EXTRACTED FROM CAMOMILE FLOWERS AND PROCESS FOR THE PREPARATION OF SAID FRACTION

Aurelia Tubaro, Gorizia; Roberto Della Loggia, Trieste; Elena Banfi, Trieste; Marina Cinco, Trieste, and Claudio Redaelli, Perego, all of Italy, assignors to Bonomelli S.p.A., Dolzago, Italy

Filed Jun. 1, 1983, Ser. No. 499,894

Claims priority, application Italy, Jun. 2, 1982, 21659 A/82

Int. Cl.⁴ A61K *35/78*

U.S. Cl. 424—195.1 **2 Claims**

1. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially effective amount of the lipophobic fraction of an alcoholic extract of camomile flowers in combination with a pharmaceutically acceptable carrier, said lipophobic fraction being obtained by:

(a) extracting the flowers with methyl or ethyl alcohol at boiling temperature of the alcohol, the alcohol containing not more than 30 percent water;

(b) washing the alcoholic extract with a cold hydrocarbon solvent selected from the group consisting of pentane, hexane, cyclohexane and petroleum ether;

(c) drying the washed alcoholic extract and dissolving the dired residue in ethyl or methyl alcohol to form a solution, filtering the solution and then evaporating the solution to obtain a final solid product.

4,584,199

ANTIBOTULINAL AGENTS FOR HIGH MOISTURE PROCESS CHEESE PRODUCTS

Stephen L. Taylor, Madison, Wis., assignor to Aplin & Barrett, Ltd., Beaminster, England

Continuation-in-part of Ser. No. 503,305, Jun. 10, 1983, abandoned. This application Oct. 20, 1983, Ser. No. 543,968

Int. Cl.⁴ A23C *9/12, 3/00, 19/00*

U.S. Cl. 426—36 **13 Claims**

1. A process for controlling the growth of *Clostridium botulinum* spores and the elaboration of botulinum toxin therefrom in a high moisture content pasteurized process cheese product containing at least 54% moisture, said process comprising adding to said cheese product an amount of nisin in the range of at least 12.5 to about 300 parts per million or a nisin-producing culture sufficient to prevent botulinum spore growth.

4,584,200

LIVESTOCK FEED PRODUCT AND METHOD AND APPARATUS FOR MANUFACTURING SAME

Emmitt B. Burelsmith, Box 879, Levelland, Tex. 79336

Filed Aug. 1, 1983, Ser. No. 518,942

Int. Cl.⁴ A23K *1/22*

U.S. Cl. 426—69 **6 Claims**

1. A method of manufacturing a livestock feed product comprising a quantity of residue from ginning cotton, a major portion of said residue comprising cotton burr, said method comprising:

providing a mold having opposed sidewalls and endwalls forming a mold cavity;

pouring a quantity of said residue into said mold;

applying a coating of a settable liquid binder to said quantity of said residue;

compacting said quantity of residue coated with said binder;

said coated residue being compacted in a series of layers one formed on top of another, each layer being formed by pouring a quantity of residue into said mold cavity generally evenly distributed therein to form a layer, applying liquid binder on said residue forming a layer, and compacting said layer after applying said liquid binder thereon.

4,584,201

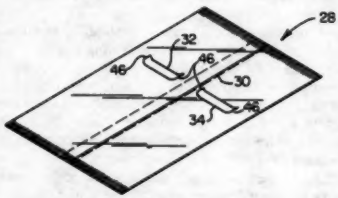
RESEALABLE PACKAGE, METHOD OF MAKING AND USE

Louis R. Boston, Chittenango, N.Y., assignor to Borden, Inc., Columbus, Ohio

Filed Feb. 17, 1984, Ser. No. 581,060

Int. Cl.⁴ B65D *33/20*

U.S. Cl. 426—106 **15 Claims**



1. A resealable package containing a crushable product comprising,

flexible material configured to enclose said product in fluid tight condition, to thereby form a package, said package having a top and a bottom,

said fluid tight condition being accomplished at said top by a linear seal extending across said top, a seal across said bottom and a longitudinal seal extending longitudinally along one side from said top seal to said bottom seal,

a seal strip mounted on the exterior surface of said package generally parallel with said top seal and spaced from said top seal a distance sufficiently great as to allow the package to be manually folded twice in a direction from the top toward the strip before the fold engages the strip, the seal strip being located on the package so as not to directly contact the longitudinal seal,

said strip including a two-sided length of tape with the first side bonded to said surface by a first pressure sensitive adhesive of some strength,

the second side of said tape being coated with a second pressure sensitive adhesive having a strength less than the strength of the first adhesive and having the characteristics of (1) bonding to both the tape and the exterior surface of the package and (2) in tension, releasing the package material before releasing the tape such that the second adhesive will remain on the tape when the surface of the package material separates from the second adhesive,

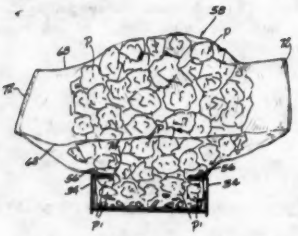
a release liner bonded to the surface of the tape and covering the second adhesive, the second adhesive having the characteristic when in tension of releasing the liner prior to releasing the tape, the tape and release liner having a rigidity and elasticity about the same as that of the flexible material.

4,584,202

MICROWAVE POPCORN PACKAGE

Harry I. Roccaforte, Western Springs, Ill., assignor to Waldorf Corporation, St. Paul, Minn.

Filed Mar. 29, 1984, Ser. No. 594,938
Int. Cl.[4] B65D *77/02, 81/34*
U.S. Cl. 426—111 5 Claims



1. A package for in situ microwave popping of popcorn, said package comprising:

(a) a paperboard carton comprising a top wall, a bottom wall, and side and end walls foldably interconnecting said top and bottom walls, said top and bottom walls being parallel to each other;

(b) said top wall including a removable portion formed therein, and a plurality of constraining portions in said top wall with said constraining portions at least partially bounding said removable portion, whereby removal of said removable portion from said carton is operable to form an opening in said top wall which opening is at least partially bounded by said constraining portions; and

(c) a sealed flexible pouch containing popcorn kernels to be popped in said package, said kernels being substantially centrally located in said pouch, said pouch being disposed in said carton in a folded condition wherein a first pair of opposed edges of said pouch are folded into overlapping relationship with each other above the enclosed popcorn kernels and a second pair of opposed edges of said pouch are folded into overlapping relationship with each other above said first pair and said enclosed popcorn kernels so as to impart to said folded pouch a size which closely conforms to the size of said carton, said pouch being disposed in said carton with said second pair of overlapping edges of said pouch being disposed immediately inwardly of said removable portion of said carton and with a portion of said popcorn kernels being disposed in parts of said pouch positioned between said bottom wall and said top wall constraining portions sufficient such that popped pieces of popcorn within said pouch will operate to wedge said parts of said pouch between said constraining portions of said carton top wall and corresponding portions of said bottom wall to lock said pouch to said carton while said overlapping edges of said pouch are free to move outwardly of said carton through said opening to expand the pouch to receive popped kernels of the popcorn.

4,584,203

DOUGH ROLLING PROCESS FOR LAMINATED COOKIES

John G. DuVall, Fairfield; Charles E. Kirby, and Suzanne L. Hardie, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Continuation-in-part of Ser. No. 475,771, Mar. 16, 1983, abandoned. This application Feb. 21, 1984, Ser. No. 579,836
Int. Cl.[4] A21D *8/00*
U.S. Cl. 426—549 32 Claims

1. A process for making an improved crumb-continuous cookie having distributed therein discrete regions of storage-stable crisp texture and discrete regions of storage-stable chewy texture from a plurality of cookie doughs, comprising the steps of:

(a) forming a laminate cookie preform from the doughs, wherein said dough providing a storage-stable chewy texture is within said dough providing a storage-stable crisp texture;

(b) rolling the preform on a support means within a closed-top cavity of generally circular shape, said cavity moving about a predetermined axis of rotation, whereby said laminated dough preform is caused to rotate about the interior surfaces of said cavity, to substantially uniformly enrobe at least one dough within an outer layer of at least one distinct dough;

(c) smearing the outer dough by the rolling step to permit some morsels contained in the enrobed dough to be partially exposed through the outer layer of dough; and

(d) baking the rolled preform to yield a baked cookie.

4,584,204

METHOD FOR PREPARING A SHRIMP-LIKE FISH MEAT PRODUCT

Tatsuo Nishimura; Ryo Sugawara, both of Tokyo; Takashi Ichitani, Shizuoka, and Susumu Obata, Chiba, all of Japan, assignors to Taiyo Gyogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1983, Ser. No. 455,008
Int. Cl.[4] A23L *1/325*
U.S. Cl. 426—643 14 Claims

1. A method for preparing a shrimp-like fish meat product, said method comprising the steps of:

preparing a fish paste from surimi, said fish paste including shrimp flavoring;

allowing a portion of said fish paste to set to form a fish gel;

forming a first portion of said fish gel into wavy fibers ranging from about 1.0 to about 4.0 min in diameter;

forming a second portion of the said fish gel into linear fibers ranging from about 0.3 to about 3.0 mm in thickness;

mixing said wavy fish gel fibers, said linear fish gel fibers, and said fish paste as a binder in the following proportions: from about 15 to about 45 parts by weight of said wavy fibers, from about 15 to about 50 parts by weight of said linear fibers, and from about 30 to about 55 parts by weight of said binder;

forming the mixture of said wavy fibers, said linear fibers, and said binder into a desired shape; and,

heating said mixture to form said shrimp-like fish meat product.

4,584,205

METHOD FOR GROWING AN OXIDE LAYER ON A SILICON SURFACE

Teh-Yi J. Chen, Santa Clara; Anjan Bhattacharyya, Sunnyvale; William T. Stacy, San Jose; Charles J. Vorst, Saratoga, and Albert Schmitz, Sunnyvale, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Jul. 2, 1984, Ser. No. 626,841
Int. Cl.[4] H01L *21/473, 21/427*
U.S. Cl. 427—93 9 Claims

1. A method for growing an oxide layer on a silicon surface of a semiconductor body, which comprises:

providing said semiconductor body with said silicon surface;

growing a first oxide layer portion over at least a portion of said silicon surface in a first thermal oxidation process at a temperature of less than or equal to about 950° C.; then

annealing said semiconductor body in a nonoxidizing ambient at a temperature greater than or equal to about 1050° C.; and then

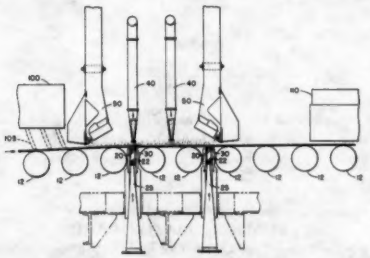
growing a second oxide layer portion at least over said first oxide layer portion in a second thermal oxidation process to complete the growth of said oxide layer.

4,584,206

CHEMICAL VAPOR DEPOSITION OF A REFLECTIVE FILM ON THE BOTTOM SURFACE OF A FLOAT GLASS RIBBON

George E. Sleighter, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 30, 1984, Ser. No. 636,039
Int. Cl.[4] C23C 16/00; B05D 5/12
U.S. Cl. 427—109 19 Claims



1. A method for coating a glass substrate comprising the steps of:

a. maintaining said glass substrate in a substantially horizontal position;

b. maintaining said glass substrate at a temperature sufficient to cause a vaporized coating reactant to react and deposit a film on the glass surface;

c. vaporizing a coating reactant;

d. creating turbulent flow of the vaporized coating reactant;

e. delivering said vaporized coating reactant to the bottom surface of said glass substrate whereupon said reactant reacts to deposit a uniform film; and

f. immediately removing unreacted and undeposited coating reactant vapor and reaction by-products through exhaust means.

11. An apparatus for depositing a film on a surface of a substrate comprising:

a. means for vaporizing a coating reactant;

b. means for delivering said vaporized coating reactant to said substrate surface, said means comprising a nozzle having a slot-shaped orifice substantially as long as the parallel dimension of the substrate to be coated and capable of creating turbulent flow; and

c. exhaust means adjacent said nozzle and extending substantially completely along the length of said nozzle

wherein said nozzle and exhaust means are positioned between conveying means which support said substrate in order to coat the supported surface of said substrate.

4,584,207

METHOD FOR NUCLEATING AND GROWING TUNGSTEN FILMS

Ronald H. Wilson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 24, 1984, Ser. No. 653,274
Int. Cl.[4] B05D 5/12
U.S. Cl. 427—124 6 Claims

1. A method for forming an adherent patterned deposit of highly conductive tungsten metal on an insulating surface which comprises

providing a receiving silicon dioxide surface,

forming a very thin deposit of polycrystalline silicon in a pattern on that silicon dioxide receiving surface,

exposing the surface with the deposited polycrystalline silicon to tungsten hexafluoride gas containing hydrogen gas to induce the removal of the polycrystalline silicon and the replacement of the polycrystalline silicon pattern with a deposit of tungsten in a pattern corresponding to that of the pattern of polycrystalline silicon which is replaced, and the strong adhesion of the deposit of tungsten to the surface.

4,584,208

PROCESS FOR COATING GLASS

Edward Hargreaves, Prescot, and Joseph E. Lewis, Ormskirk, both of England, assignors to Pilkington Brothers P.L.C., St. Helens, England

Filed Mar. 26, 1985, Ser. No. 716,167
Claims priority, application United Kingdom, Mar. 29, 1984, 8408116
Int. Cl.[4] C03C 17/22
U.S. Cl. 427—160 17 Claims

1. A process for applying an infra red reflecting fluorine containing tin oxide coating to glass comprising directing on to a hot glass surface at a temperature of 400° to 750° C. a suspension in a carrier gas of a finely divided solid inorganic tin (IV) compound free from carbon-tin bonds which contains both chlorine and fluorine and which evolves a tin containing vapor at or below the glass temperature.

4,584,209

FLOOR COVERING MATERIALS

Alan M. Harrison, Welwyn, United Kingdom, assignor to Welwyn Plastics (1955) Limited, Welwyn North, England

Filed Jan. 4, 1985, Ser. No. 688,963
Claims priority, application United Kingdom, Jan. 6, 1984, 8400275
Int. Cl.[4] B32B 5/16, 33/00
U.S. Cl. 427—201 5 Claims

1. A method of manufacturing a floor covering, comprising the steps of:

(a) mixing grits of at least one abrasive substance with a thermoplastic paste;

(b) coating said mixture on a base material;

(c) passing the coated base material under a doctor knife to level the coating;

(d) sprinkling a colored quartz aggregate material on the levelled coating surface;

(e) curing the levelled coated base material with said colored quartz aggregate; and

(f) repeating said steps (b) through (e) at least once, to produce at least two coating layers;

wherein the maximum dimension of each of said grits does not exceed 0.7 mm and does not exceed half the thickness of the levelled coating layer in which it is contained, and

wherein the maximum dimension of each of said colored quartz aggregate is greater than 0.7 mm but less than 1.8 mm;

the total thickness of the floor covering being between 2 and 4.5 mm, and the grits and quartz particles each being present in an amount which does not exceed 25% of the weight of floor covering.

4,584,210

METHOD AND MEANS FOR PRODUCING WATERPROOFING MEMBRANES

Mario Previsani, Vasciglano di Stroncone, Italy, assignor to U.S. Intec Inc., Port Arthur, Tex.

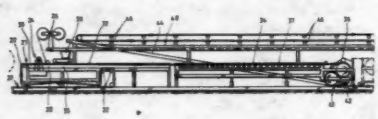
Filed Oct. 1, 1984, Ser. No. 656,514
Int. Cl.[4] B05D 1/18, 1/36, 3/02
U.S. Cl. 427—204 10 Claims

1. In the process of producing a waterproofing membrane by saturating a suitable support matting with a thermoplastic bituminous material, the improvement whereby a membrane is produced with the support matting situated in the membrane at a predetermined position such that its integrity is protected during installation without the need for excess thermoplastic material, which comprises the steps of:

(a) saturating the matting with a thermoplastic material to produce a predetermined minimum thickness on both the

upper and lower surfaces of the membrane sufficient to provide adequate flow characteristics during installation of the membrane without excessive exposure of the support matting to deteriorating conditions during installation;

(b) cooling the thus-coated membrane such that substantially



all of the thermoplastic material hardens above its flow temperature;

(c) inverting the membrane after cooling; and

(d) treating the surface of said membrane which had been the lower surface of said membrane prior to said inversion by adding at least one additional layer of material to said membrane surface.

4,584,211

CONTINUOUS HOT DIP ALUMINUM COATING METHOD

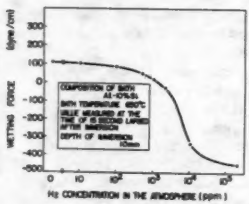
Seizun Higuchi; Kenichi Asakawa, and Nobuyoshi Okada, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 16, 1984, Ser. No. 641,561

Claims priority, application Japan, Aug. 17, 1983, 58-150030

Int. Cl.⁴ A23E 5/00

U.S. Cl. 427—320 **7 Claims**



1. A continuous hot dip aluminum coating method used in a continuous hot dip aluminum coating for hot dip aluminum coating on steel in Sendzimir method or nonoxidizing furnace method, said steel sheet containing 0.08 to 0.25% of Ti which is 15 to 100 times as large as the total of C and N contents, comprising the step of covering the surface of the coating bath in the snout of said hot dip coating line by use of an inert gas atmosphere, wherein the concentration of hydrogen in said inert gas atmosphere is not more than 1000 ppm.

4,584,212

DECORATIVE GLASS SCULPTURE AND METHOD OF MANUFACTURE

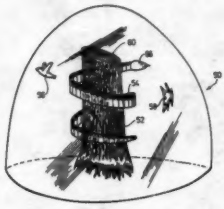
Toan Klein, 9 Humewood Dr., Suite 9, Toronto, Ontario, Canada (M6C 1C9), and Gary Klein, 413 Arlington Ave., Apt. 3, Toronto, Ontario, Canada (M6C 3A1)

Continuation-in-part of Ser. No. 116,665, Jan. 29, 1980. This application Apr. 11, 1984, Ser. No. 599,271

Int. Cl.⁴ B44F 1/10

U.S. Cl. 428—13 **12 Claims**

1. Sculpture comprising a mass of vitreous and mainly transparent material bounded by an arcuately curved surface, and a two dimensional diaphanous pellicle image embedded within said mass remote from said surface, portions of said image when viewed along a line of view passing through said arcuately curved surface being separated therealong,



whereby as the line of view is changed, the relationship of said image portions changes in a relatively predictable manner to thereby create a three dimensional image effect.

4,584,213

COMMEMORATIVE CARD

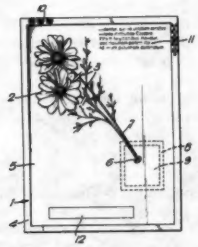
Patricia L. Rentowl, 58 Gratwicke Rd., Tilehurst, Reading RG3 4TT, Berkshire, England

Filed Apr. 4, 1985, Ser. No. 720,075

Claims priority, application United Kingdom, Apr. 6, 1984, 8408943

Int. Cl.⁴ A47G 7/02

U.S. Cl. 428—23 **13 Claims**



1. In a commemorative card assembly comprising a flat card member having at least one receptacle means to receive the stem of a fresh flower, water retaining means including a mass of water-retentive material disposed on the card member at the location of said receptacle means and into which the stem of the fresh flower is to be received, and said receptacle means including means on said card member for mounting the flower on the front of the card member; the improvement wherein said card member is formed of a water-impervious material so that the commemorative card assembly can be left in the open without suffering damage, and so that water stored in the water-retentive material will not damage the card member.

4,584,214

FIREPROOF COVERING

Horst W. Eiermann, Basel, Switzerland, assignor to PCT Pyrochemtek AG, Switzerland; Rockwool AB, Sweden and Chemische Fabrik Grunau GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 370,664, Apr. 22, 1982, abandoned. This application Jun. 20, 1984, Ser. No. 622,864

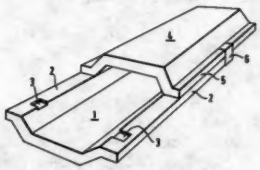
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1981, 8111976[U]; Mar. 11, 1982, 3208890

Int. Cl.⁴ B32B 27/00; H01B 7/28

U.S. Cl. 428—35 **30 Claims**

1. A fireproof covering structure for protecting heat-sensitive material and structures, said covering comprising:

pre-shaped mineral wool components, molded with a binder to be rigid, attachable and substantially self-supporting in the form of upper and lower rigid component members, the upper and lower component members together including at least two bent portions, such that a sealed trough may be formed therebetween for surrounding the heat-sensitive material and structure; and,



a fireproof coating at least on the outside of the rigid mineral wool components, the coating progressively sintering onto the surface of the rigid mineral wool components under fire conditions and protecting the components as the binder progressively decomposes, whereby heat-sensitive material and structure can be protected from fire conditions for extended periods of time.

4,584,215

POLYVINYLIDENE FLUORIDE COMPOSITIONS OF IMPROVED FLEXIBILITY AND THEIR USE, PARTICULARLY IN THE MANUFACTURE OF FLEXIBLE TUBES

Anne Bré, Le Plessis Belleville; Marc Mollard, Montesson, and Maseh Osgan, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 6, 1985, Ser. No. 708,835

Claims priority, application France, Mar. 6, 1984, 84 03574

Int. Cl.[4] C08K *5/10;* **C08L** *27/16;* **B26D** *23/04*

U.S. Cl. 428—36 **22 Claims**

1. A composition of polyvinylidene fluoride, comprising a major portion of polyvinylidene fluoride of high crystallinity containing at most 5% by moles of a different halogenoethylene monomer, having an average molecular weight of at least 100,000, with which is incorporated a proportion, sufficient to improve flexibility, of at least one ester formed between, on the one hand, at least one aliphatic diol selected from 2,2-dimethyl-1,3-propanediol, polyethylene glycols containing 2 to about 20 ethylene oxide recurrent units per molecule, propylene glycol, polypropylene glycols containing from 2 to about 15 propylene oxide recurrent units per molecule, tetramethylene gylcol and polytetramethylene glycols containing from 2 to about 12 tetramethylene oxide recurrent units per molecule or an aliphatic triol and, on the other hand, at least one monocarboxylic acid having an aliphatic chain containing 2 to 10 carbon atoms or a monocarboxylic acid having an aromatic radical, said plasticizer being incorporated into the polyvinylidene fluoride while the latter is in the molten phase.

4,584,216

PRECURED SPLIT HINGE FOR PHOTOMASK ASSEMBLY

James S. Kenworthy, Rockland; Victor Motyka, South Attleboro, both of Mass., and Robert G. Spindler, Plymouth, Minn., assignors to PPG Industries, Inc., Pittsburgh, Pa.

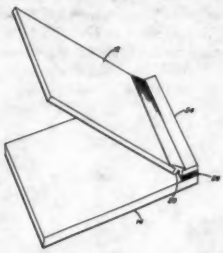
Filed Jun. 15, 1984, Ser. No. 621,303

Int. Cl.[4] B32B *17/06;* **B44F** *1/06;* **G03B** *27/04*

U.S. Cl. 428—38 **20 Claims**

1. In a method for making a hinged photomask assembly by joining two rigid plates, at least one of which comprises a photomask image, by means of a flexible polymeric material, the improvement which comprises:

a. forming the polymeric material into a cured split hinge configuration; and



b. attaching the cured polymeric split hinge to each of said two rigid plates by means of an adhesive.

4,584,217

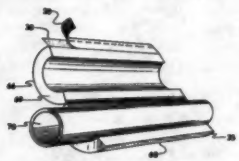
COMPOSITE PRESSURE SENSITIVE ADHESIVE CONSTRUCTION

Jack M. McClintock, Stow, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

Continuation-in-part of Ser. No. 303,058, Sep. 17, 1981, abandoned, and a continuation-in-part of Ser. No. 218,273, filed as PCT US80/00559, May 13, 1980, published as WO80/02532, Nov. 27, 1980, § 102(e) date Dec. 19, 1980, Pat. No. 4,389,270, which is a continuation-in-part of Ser. No. 38,679, May 14, 1979, Pat. No. 4,264,388, which is a continuation-in-part of Ser. No. 837,828, Sep. 29, 1977, Pat. No. 4,157,410. This application Feb. 9, 1983, Ser. No. 465,288

Int. Cl.[4] F16L *59/14;* **B29D** *23/00;* **B32B** *5/18*

U.S. Cl. 428—40 **10 Claims**



1. An article having a longitudinal split therein and an adhesive construction thereon, comprising:

the article and the adhesive construction,

said adhesive construction having a single carrier layer, said carrier layer having two separate areas of an adhesive located on one side thereof at the lateral portions thereof and a central portion free from said adhesive located between said lateral portions,

one of said lateral adhesive portions of said carrier layer adhered to said article adjacent to said split, said second lateral adhesive portion of said same carrier layer non-adheringly located adjacent to said remaining split portion of said article, and said adhesive-free portion overlying said split portion,

said adhesive carrier layer having a single release liner, said release line attached to said second lateral adhesive portion, said release liner extending into said adhesive-free area and forming a tab.

4,584,218
WALL ORNAMENT FOR SHOWER AND BATHTUB ENCLOSURES

E. Clayton Travis, 4235 Island View Dr., Linden, Mich. 48451

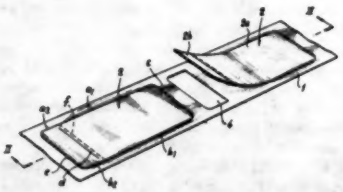
Continuation-in-part of Ser. No. 641,272, Aug. 16, 1984, Pat. No. 4,536,423. This application Oct. 22, 1984, Ser. No. 663,714
The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.
Int. Cl.[4] B44C 5/04
U.S. Cl. 428—40 2 Claims

1. As an article of manufacture, a waterproof ornamental poster for attachment to a vertical building wall of a tub or shower enclosure, comprising:
an enlarged substantially full scale, full size photograph of a person or other image imprinted upon a sheet of impervious moisture resistant synthetic paper, said sheet including an extruded polypropylene film;
the contours of said image being die cut generally along its periphery, defining a contoured outer peripheral edge;
a layer of pressure sensitive material mounted on and overlying one side of said sheet along its length for engagement with said wall;
and a strippable protective sheet mounted upon the adhesive layer;
said imprinted sheet on removal of said protective sheet being adapted for engagement with the building wall of a shower or bathtub enclosure, retaining said ornamental poster in snug supported surface engagement therewith along its length.

4,584,219
WEB OF LABELS

Hans R. Baartmans, Heikamptraat 37, Essen, Belgium

Filed Nov. 9, 1984, Ser. No. 669,828
Int. Cl.[4] B32B 7/06, 7/12
U.S. Cl. 428—42 4 Claims



1. Web of labels consisting of a web of carrier material with self-adhesive labels spaced apart thereon, each of which is cut out by a peripheral cut from a web of label material adhering to the web of carrier material, characterised in that the peripheral cut consists of two different parts, one of which extends only through the label material and the other through the label and carrier material, that an intermediate cut extending to the divisions between the two parts of the peripheral cut extends only through the carrier material, and that another intermediate cut parallel thereto extends only through the label material, in such a manner that two connected label parts are formed, while the distance between the intermediate cuts amounts to a few millimeters.

4,584,220
LAMINATED TAPE

Kenneth M. Melbye, Stillwater, Minn., assignor to Kroy Inc., Scottsdale, Ariz.

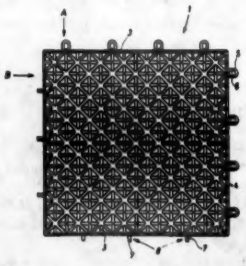
Filed Jan. 15, 1982, Ser. No. 339,481
Int. Cl.[4] A61F 13/02
U.S. Cl. 428—42 11 Claims

1. A laminated tape for preparing figures of desired shape from one layer of the laminated tape for application to a desired medium comprising:
a first film layer comprised of a relatively soft and flexible material capable of being cut by an elongated cutting ridge of a cutting die defining the figure of desired shape, said first film layer having a top and a bottom face and being constructed of a material having a tensile strength of no greater than about 1000 pounds per square inch, said first film layer further being at least 0.001 inches thick and being constructed of a material capable of being cut by a plastic cutting ridge against a plastic or rubber cutting pad with a cutting force of no more than about 250 pounds per linear inch of said cutting ridge; and
a second film layer for supporting said first film layer, said second film layer having a top and bottom face, said top face of said second film layer disposed in face-to-face relationship with respect to the bottom face of said first film layer, said bottom face of said first film layer having an adhesive coating for selectively securing said first film layer to said top face of said second film layer, said top face of said second film layer having properties permitting the selective removal of said first film layer from said second film layer and said top face of said first film layer being free of any adhesive layer.

4,584,221
FLOOR COVERING ASSEMBLY

Peter Küng, Rapperswil, Switzerland, assignor to Sportforderung Peter Kung AG, Rapperswil, Switzerland

Filed Jul. 19, 1984, Ser. No. 632,480
Int. Cl.[4] B32B 3/06, 3/24; E01C 5/20
U.S. Cl. 428—44 2 Claims



1. A floor covering assembly comprising:
a plurality of rectangular plate-like plastic elements made of

an elastic material, said plastic elements being interconnected with a clearance between adjacent elements,

each element having supporting feet located at a bottom surface of said element and arranged in rows extending parallel to the sides of said element,

each element also having coupling members located on at least one side of said element, the coupling members on each said at least one side being arranged in a row extending parallel to said at least one side of said element,

each of said coupling members having an oblong hole receiving supporting feet of an adjacent element in a manner such that said adjacent element is displaceable in a given direction,

each element further having laterally projecting locking cams located on frame sides thereof without any coupling elements

said locking cams being located between coupling members positioned on opposite sides of the respective element,

each of said locking cams cooperating with a frame bottom surface of an adjacent element and having an upwardly projecting abutment surface.

4,584,222

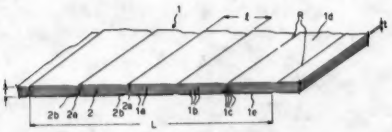
GLUED LAMINATED WOOD

Masakuni Iwamoto, Obu, Japan, assignor to Meinan Machinery Works, Inc., Obu, Japan

Division of Ser. No. 494,661, May 16, 1983, Pat. No. 4,507,162. This application Nov. 9, 1984, Ser. No. 670,152

Int. Cl.[4] B32B *21/14, 31/04*

U.S. Cl. 428—57 **12 Claims**



1. Glued laminated wood having N-layers of veneer sheets and cut from a substantially continuously producible length of glued laminated wood formed by laying up and laminating successively lapped unit veneer sheets, each unit veneer sheet having a length L as measured in the direction of said laying-up and a thickness t, and said unit veneer sheets being successively offset from each other in the direction of said laying-up at a length interval l with respect to its underlying unit veneer sheet, each of said unit veneer sheets as it appears in said continuously producible length of glued laminated wood having N-number of straight length portions which are disposed in tandem relation and successively displaced from each other in the direction of the thickness of said continuously producible length of glued laminated wood a distance substantially equal to said thickness t, said length interval l being substantially equal to L divided by N, and each said unit veneer sheet as it appears in said continuously producible length of glued laminated wood further having a curved length portion between each successive pair of its said straight length portions, all of said unit veneer sheet straight length portions being parallel to each other, and each of said unit veneer sheets extending through said thickness of said continuously producible length of glued laminated wood from one surface thereof to the other with the endmost of its said straight length portions forming respective portions of the opposite faces of said continuously producible length of glued laminated wood.

4,584,223

MAGNETIC DISPLAY PANELS

Wallace A. Krapf, 25 Berkley St., Rochester, N.Y. 14607

Filed Jun. 20, 1984, Ser. No. 622,579

Int. Cl.[4] G09B *29/00*

U.S. Cl. 428—58 **7 Claims**

1. A laminated magnetic display panel having an overall thickness of less than approxilately 0.1", and weighing less than approximately one pound per square foot, and comprising

a core panel having opposed, plane, firm surfaces that are extremely resistant to indentation by marking pencils and the like,

a pair of thin outer panels laminated, respectively, to the opposed surfaces of said core panel, and operatively increasing the rigidity and strength of said core panel, and

a transparent plastic cover layer secured over at least one of said outer panels,

at least said one outer panel comprising a layer of steel foil having a thickness in the approximate range of 2 to 5 mils, and operable releasably to retain magnetically-backed symbols against the outer surface of said plastic cover layer.

4,584,224

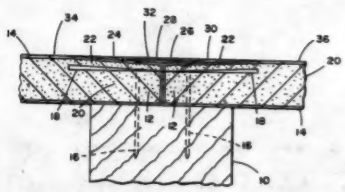
TAPERED EDGE BOARD

Joseph W. Schneller, Williamsville, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Filed Mar. 18, 1985, Ser. No. 713,350

Int. Cl.[4] B32B *3/02, 3/06*

U.S. Cl. 428—60 **15 Claims**



1. A tapered edge board comprising a front face which is substantially flat with the exception of a narrow elongate area adjacent at least one substantially straight edge of said board, said front face having a substantially flat tapered surface along said at least one substantially straight edge, said tapered surface being formed by the presence of a thin, deep groove formed to extend into the edge of said at least one substantially straight edge and by a thin layer between said thin, deep groove and said front face being bent inwardly to substantially close said thin, deep groove at said edge.

4,584,225

PROTECTIVE MATERIAL AND USE

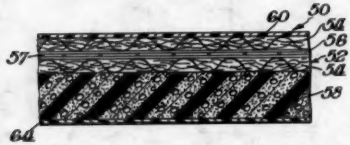
Herbert B. Adelman, Wilmington, Del., assignor to The Crowell Corporation, Newport, Del.

Continuation-in-part of Ser. No. 348,782, Feb. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 246,372, Mar. 23, 1981, Pat. No. 4,321,297, which is a continuation-in-part of Ser. No. 166,079, Jul. 7, 1980, Pat. No. 4,263,360. This application Mar. 21, 1983, Ser. No. 477,241

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210360

Int. Cl.[4] B32B *1/00, 3/26;* C09J *7/02*

U.S. Cl. 428—71 2 Claims



1. A package of laminated sheeting in which the sheeting has a paper layer laminated to a layer not over about ½ inch thick of pliable closed-cell microcellular resin foam, the foam having its outer surface coated with a cohesive-nonadhesive layer containing sufficient anti-static material to inhibit the build-up of static electricity on the sheet, the package having the sheeting tightly wrapped in an opaque wrapper.

4,584,226

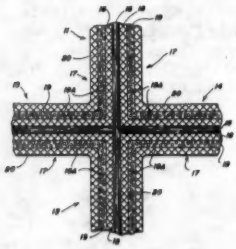
LOAD TRANSFER STRUCTURE AND METHOD OF MAKING THE SAME

Mario L. Vitale, St. Louis County, and Victor A. Finazzo, St. Peters, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Apr. 30, 1984, Ser. No. 605,139

Int. Cl.[4] B32B *5/12*

U.S. Cl. 428—105 12 Claims



8. A cruciform configured load transfer structure comprising:

(a) a plurality of first and second laminate components formed into webs angularly divergent from a common junction;

(b) carbon fiber strands extending between said webs and intersecting in a common junction where said carbon fiber strands cross over each other; and

(c) resin means impregnated in said laminate components and carbon fiber strands for integrating said components and carbon fiber strands into the cruciform configured load transfer structure in which tensile loads on said webs are transferred by said carbon fiber strands through said common junction.

4,584,227

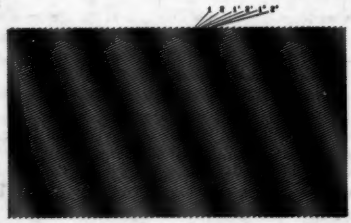
JOINING TAPE

Dhiraj H. Darjee, Ballston Lake, and Daniel E. Devine, Green Island, both of N.Y., assignors to Norton Company, Worcester, Mass.

Filed Nov. 19, 1984, Ser. No. 672,988

Int. Cl.[4] B32B *5/12;* C09J *7/02*

U.S. Cl. 428—113 16 Claims



1. A joining tape comprising a straight laid narrowly multidirectional yarn array with an upper limit of not more than 20° a lower limit of not less than 0.5° and an adhesive encapsulating said yarn array.

4,584,228

BULLET-PROOF VEST OR THE LIKE

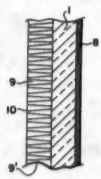
Reinhard Droste, Wuppertal, Fed. Rep. of Germany, assignor to Akzo Nv, Arnhem, Netherlands

Filed Aug. 15, 1985, Ser. No. 766,009

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1984, 8425173[U]

Int. Cl.[4] B32B *3/28*

U.S. Cl. 428—182 13 Claims



1. A bullet-proof garment product, comprising several layers of textile fabrics on a first side and a shock absorber on a second side, wherein the shock absorber is a three-dimensional fabric comprising a plurality of humps projecting in a direction substantially perpendicular to a plane of said fabrics and having a hollow part of at least 90% by volume, said humps having a height of 5 to 30 mm.

4,584,229

GLAZING ARTICLE

Claude Bourelier, Paris; Gérard Daudé, Villeneuve d'Ornon, and Roger Orain, Garches, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

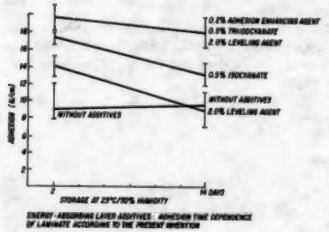
Continuation-in-part of Ser. No. 329,503, Dec. 10, 1981, abandoned. This application Feb. 10, 1984, Ser. No. 579,035

Int. Cl.[4] B32B *7/02, 27/40;* B60J *1/02*

U.S. Cl. 428—216 13 Claims

1. A glazing laminate comprising a first plastic layer having energy absorbing properties and a second plastic layer comprising a thermoset polyurethane having anti-lacerative and self-healing properties, said first plastic layer formed from a

reaction mixture including a thermoplastic polyurethane-polyurea containing about 1 to about 20% by weight of urea



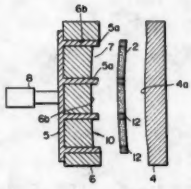
groups and at least one polyisocyanate having NCO functionality greater than two.

4,584,230

PROCESS FOR FABRICATING FOAM RESIN PANEL WITH INTEGRAL REINFORCEMENT

Nobuo Saegusa, Ebina, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 8, 1985, Ser. No. 752,718
Int. Cl.⁴ B32B *5/14*
U.S. Cl. 428—218 **12 Claims**



1. A foam resin panel comprising:
a major section formed by foaming a resin material; and
a reinforcing section integral with said major section and of the same material as said major section, said reinforcing section having a higher density that said major section and defining a predetermined pattern suitable for reinforcing the panel, and said reinforcing section being formed by compressing parts of a foam resin panel in said predetermied pattern.

4,584,231

SOLVENT CAST ACRYLIC FILM

Henry E. Knoop, Howell, Mich., assignor to VCF Packaging Films, Inc., Howell, Mich.

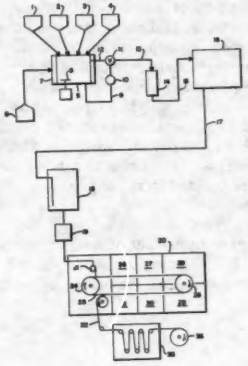
Filed Dec. 2, 1983, Ser. No. 557,448
Int. Cl.⁴ B05D *1/14*
U.S. Cl. 428—220 **20 Claims**

1. An acrylic film consisting essentially of about 97–100% of a polymer system and about 0–3% of residual organic solvent, said polymer system consisting essentially of a polymer or mixture of polymers, each of said polymers consisting essentially of monomers of formula (I):

$$H_2C{=}C(-O-R_2)-R_1$$

wherein R_1 is selected from the group consisting of hydrogen and methyl, and R_2 is selected from the group consisting of straight or branched alkyl groups of from 1 to 20 carbon atoms,

each of said polymers having the following properties:
(a) a total elongation of about 120–250%;
(b) a tear resistance of about 4.5–12.5 g/mil (177–492 mg/micron);
(c) a tensile strength of about 4500–5000 lbs/in^2 (317–387 kg/cm^2);
(d) a molecular weight of about 250,000–500,000 amu;
(e) an acid content of about 0.0–5.0%;



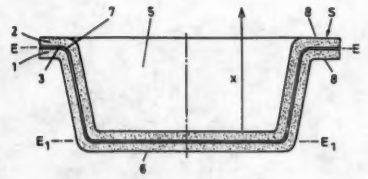
(f) a Tucon hardness in Knoop numbers of about 6–12;
(g) being substantially free of reactive groups;
said film having each of the aforesaid properties (a) through (c) and (e) through (g), having a thickness of about 0.5–5.0 mils (13–127 microns), having dimensional stability of less than 3.0% shrinkage, being completely free of pinholes and gels.

4,584,232

FOAM MATERIAL SOUND ABSORPTION

Werner Frank, Bergisch Gladbach, and Josef F. Irregeher, Leverkusen, both of Fed. Rep. of Germany, assignors to Illbruck GmbH Schaumstofftechnik, Fed. Rep. of Germany

PCT No. PCT/DE84/00014, § 371 Date Sep. 13, 1984, § 102(e) Date Sep. 13, 1984, PCT Pub. No. WO84/02998, PCT Pub. Date Aug. 2, 1984
PCT Filed Jan. 20, 1984, Ser. No. 654,020
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1983, 3301682; Oct. 11, 1983, 3336850
Int. Cl.⁴ G10K *11/6;* E04B *1/82;* B60R *13/08;* B32B *5/18*
U.S. Cl. 428—247 **6 Claims**



1. A sound absorbing member comprising
a first open cell foam panel,
a second open cell foam panel,
a fiber grid insert disposed between said panels,
a bonding substance which bonds said grid fibers together and bonds said first and second panels to said grid insert,
said panels being compacted under heat and pressure to provide an acoustical impedance of from 20 to 120 rayls.

4,584,233

PATCH FOR URETHANE-BASED MEMBRANE AND METHOD

Arthur L. Meader, Jr., Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 428,520, Sep. 30, 1983, abandoned. This application Dec. 12, 1983, Ser. No. 560,299

Int. Cl.[4] B32B 27/12, 27/18

U.S. Cl. 428—290 9 Claims

1. A patch for patching a urethane-based coating membrane comprising a section of nonwoven, fabric-reinforced, urethane-based membrane, said membrane section being coated with sufficient patching composition to permit said patch to adhere in a water-tight manner to said urethane-based coating membrane, said patching composition comprising:

(a) 25 to 75 parts by weight of polyurethane formed by reacting 20 to 55 parts by weight of a polyurethane precursor with 6 to 20 parts by weight of a polyisocyanate;

(b) 25 to 75 parts by weight of a substantially inert, nonvolatile extender selected from the group of cutback asphalts and extender oils;

(c) a volatile solvent; and

(d) 20 to 50 parts by weight of a water-insoluble, heavier-than-water filler material sufficiently dense to make the composition denser than the density of water.

4,584,235

THIN FILMS OF PHTHALOCYANINE ON SUBSTRATE

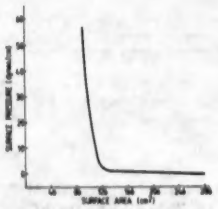
Gareth G. Roberts, Durham, and Martyn V. Twigg, Yarm, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 420,575, Sep. 20, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 662,134

Claims priority, application United Kingdom, Sep. 25, 1981, 8129018

Int. Cl.[4] B05D 1/18

U.S. Cl. 428—333 11 Claims



11. A composite article comprising a thin film of a phthalocyanine compound on a substrate, the film having a thickness of less than 40Å.

4,584,234

WRAPPING MATERIALS FOR PHOTOGRAPHIC MATERIALS

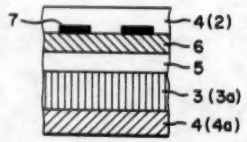
Masuhiko Hirose, and Mutsuo Akao, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 16, 1984, Ser. No. 631,063

Claims priority, application Japan, Jul. 20, 1983, 58-130781

Int. Cl.[4] B32B 5/16, 9/00

U.S. Cl. 428—323 11 Claims



1. Wrapping materials for photographic materials, comprising laminated layers comprised of a paper support and at least one thermoplastic resin layer superposed on at least one surface of said paper support; wherein said thermoplastic resin layer comprises a blended resin of

(a) a high density polyethylene having a density of 0.950 g/cm^3 or more and a melt index of 10–40, and

(b) a low density polyethylene having a density of 0.930 g/cm^3 or less and a melt index of 1–40,

the weight ratio of (b)/(a) being 70/30-5/95.

4,584,236

GLASS PANE HAVING LOW EMISSIVITY, PARTICULAR FOR VEHICLES

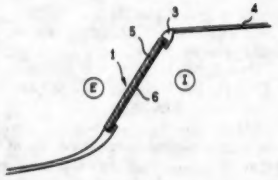
Daniel Colmon; Bernard Letemps, both of Thourotte; Jean-Pierre Delpeyroux, Le Pecq, and Jacques Fremeaux, Bougival, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Jul. 24, 1984, Ser. No. 633,919

Claims priority, application France, Aug. 4, 1983, 83 12843

Int. Cl.[4] B32B 7/00, 7/02; B60L 1/02

U.S. Cl. 428—333 18 Claims



1. A pane whic comprises a light transmissive sheet which defines the exterior-interior boundary of a compartment, said sheet having a coating disposed on the face of said sheet directed to the interior of said compartment and said coating having a high light transmission value and low emissivity, said coated pane having an overall transmission value of at least 0.70, and wherein said coating is exposed to the interior of said compartment.

3. The pane of claim 1 wherein said coating has a thickness of up to 3000 angstroms.

4,584,237

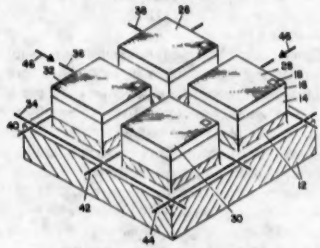
MULTILAYER MAGNETO-OPTIC DEVICE

George R. Pulliam, Anaheim, Calif., assignor to Litton Systems, Inc., Beverly Hill, Calif.

Division of Ser. No. 481,914, Apr. 4, 1983, Pat. No. 4,428,872. This application Sep. 7, 1984, Ser. No. 648,508

Int. Cl.[4] G11C *19/10*

U.S. Cl. 428—336 11 Claims



1. A magneto-optic device (10) having a low switching threshold comprising:

at least two layers of magnetic material juxtaposed in an exchange coupled relationship upon a non-magnetic substrate;

a first layer (14) including magnetic material having magnetic and optical properties;

a second layer (16) including magnetic material having switching properties;

wherein said first layer has improved magnetic and optical properties over said record layer, and said second layer has an improved switching property over said first layer;

said first layer having a relative thickness greater than the thickness of said second layer, and a relative anisotropy constant higher than the anisotropy constant of said second layer; and

a region (18) of said magnetic material within said second layer having a relative anisotropy constant less than the anisotropy constant of the remainder of said magnetic material of said second layer.

4,584,238

ULTRATHIN CHEMICALLY RESISTANT MARKING SYSTEM AND METHOD OF PRODUCING THEREFOR

Tamar G. Gen, Mountain View; Karen M. Biddick, Palo Alto, and Erling Hansen, Los Altos, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 29, 1984, Ser. No. 626,361

Int. Cl.[4] B32B *27/00*; C09J *7/02*; B42D *15/00*

U.S. Cl. 428—349 29 Claims

1. An ultrathin chemically resistant marking system consisting essentially of at least one layer of an adhesive thermoplastic polymeric film and printed matter on at least one principal surface thereof, said adhesive film having the properties comprising adhesion to a substrate after being heated to a temperature of less than about 600° F., minimum flow characteristics after being heated so as to maintain printed matter legibility, optical clarity, chemical resistance to chemical baths of caustic solutions and methylene chloride at temperatures as high as about 190° F. and minimum transference of each of the chemical baths after being transferred between the different chemical baths; said at least one layer of adhesive film and said printed matter cooperating to form a marker.

4,584,239

STRETCHED MULTILAYER POLYPROPYLENE FILM

Masahiro Kakugo; Yoshiharu Fukui; Kizuku Wakatsuki; Seiichiro Ima, and Junichi Kimura, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 11, 1985, Ser. No. 753,846

Claims priority, application Japan, Jul. 13, 1984, 59-146656

Int. Cl.[4] B32B *27/32*

U.S. Cl. 428—349 6 Claims

1. A stretched multilayer polypropylene film comprising a stretched crystalline polypropylene layer and a layer of a composition (B) laminated on at least one side of the stretched crystalline polypropylene layer, wherein the composition (B) comprises a homo- or copolymer composed mainly of ethylene, propylene or butene-1, said homo- or copolymer having a melting point, as determined with a differential scanning calorimeter, of 150° C. or less, and further contains a vinylcycloalkane polymer (A) in an amount of 0.05 wt ppm to 10 wt% calculated as a vinylalkane unit.

6. A film as claimed in claim 5, wherein the vinylcycyloalkane polymer (A) is a polymer of vinylcyclohexane.

4,584,240

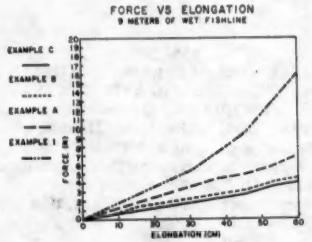
COEXTRUDED MONOFILAMENT FISHLINE

Paul F. Herbert, Washington, and Robert L. Rackley, Parkersburg, both of W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 637,803, Aug. 6, 1984. This application Jul. 12, 1985, Ser. No. 753,554

Int. Cl.[4] D02G *3/00*

U.S. Cl. 428—373 11 Claims



1. A coextruded oriented monofilament fishline having a diameter of about from 0.1 to 1.2 mm, the fishline being substantially circular in cross-sectional configuration and having a concentric sheath and core construction, and wherein the wet initial tensile modulus of the oriented core polymer is at least about 5 times the wet initial tensile modulus of the oriented sheath polymer and wherein the ratio "α" of the volume fraction of the core to the total volume of the monofilament is limited by the relationship:

$$\frac{1}{n-1} < \alpha < \sqrt{\frac{1}{n-1}}$$

wherein n is the ratio of the wet initial tensile modulus of the oriented core polymer to the wet initial tensile modulus of the

oriented sheath polymer and wherein at least about 50% of the core polymer is a polyamide or polyester.

4,584,241

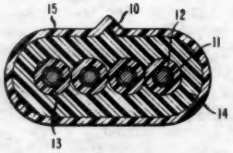
STABILIZATION OF PVC BODIES

Jae H. Choi, Indianapolis; Larry E. Fortner, Beech Grove, both of Ind.; John J. Mottine, Jr., West Keansburg, N.J., and William C. Vesperman, Bel Air, Md., assignors to AT&T Technologies, Berkeley Heights and AT&T Bell Laboratories, Murray Hill, both of, N.J.

Filed Apr. 6, 1984, Ser. No. 597,130

Int. Cl.[4] B32B *15/00*; H01B *7/00, 7/01*

U.S. Cl. 428—379 6 Claims



1. A cable comprising an electrical conductor and a body of poly(vinyl chloride) based material wherein said body surrounds at least a portion of said electrical conductor, said body comprising a poly(vinyl chloride) based polymer, a calcium-zinc stabilizer, a complex ester of oleic acid with a branched chain alcohol, and a diglycerol ester of oleic acid wherein said complex ester is present in a weight percentage of from 0.05 to 0.2 of said polymer, and said diglycerol ester of oleic acid is present in a weight percentage of from 0.1 to 0.5 of said polymer.

4,584,242

PLATE-LIKE BARIUM FERRITE PARTICLES FOR MAGNETIC RECORDING AND PROCESS FOR PRODUCING THE SAME

Norimichi Nagai; Norio Sugita; Nanao Horiishi, all of Hiroshima; Masao Kiyama, and Toshio Takada, both of Kyoto, all of Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Filed May 28, 1985, Ser. No. 738,471

Claims priority, application Japan, May 31, 1984, 59-112520; May 31, 1984, 59-112521

Int. Cl.[4] C04B *35/26*

U.S. Cl. 428—403 2 Claims

1. Plate-like barium ferrite particles showing a magnetization (M) of more than 40 emu/g in a magnetic field of 10 KOe, a coercive force of 300 to 1000 Oe and an average particle diameter of 0.05 to 0.3 μm, comprising plate-like particles represented by the formula:

$$BaFe_{12-2x}M_xTi_xO_{19}$$

wherein x is 0 to 1.2 and M represents Co(II) or Co(II) and a divalent metal ion other than Co(II) selected from Fe, Mn, and Zn, the surface of the plate-like particles being modified with magnetite represented by the formula:

$$FeO_y.Fe_2O_3$$

wherein y is over 0 and not more than 1, said plate-like barium ferrite particles absent the magnetite exhibiting a magnetization of less than 40 emu/g in a magnetic field of 10 kOe.

4,584,243

ABRASIVE, PRODUCTION THEREOF AND USE THEREOF IN MAGNETIC RECORDING MEDIUM

Hidekimi Kadokura; Hiroshi Umezaki, and Hideaki Murakami, all of Nihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 25, 1983, Ser. No. 545,279

Claims priority, application Japan, Nov. 1, 1982, 57-192904; Nov. 2, 1982, 57-192838; Jun. 7, 1983, 57-192904; Jun. 7, 1983, 57-192838; Jul. 12, 1983, 57-192904; Jul. 12, 1983, 57-192838

Int. Cl.[4] G11B *5/70*

U.S. Cl. 428—403 3 Claims

1. In a magnetic recording medium comprising a support and a magnetic recording layer coated thereon, the improvement wherein the magnetic recording layer comprises, per 100 parts by weight of a magnetic powder, 0.1 to 15 parts by weight of an abrasive having an oleophilic surface obtained by subjecting 100 parts by weight of an inorganic powder having a Mohs hardness of 5 or above and an average particle size of 0.1 to 2 μm across to a dry contact treatment with 0.01 to 20 parts by weight of a dispersing agent having an olephilic group under grinding conditions imparting an impact value of IG or greater prior to the mixing with the magnetic powder.

4,584,244

PREPARATION OF COLD FLOW RESISTANT POLYMER POWDERS

Jeff T. Fenton, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed May 28, 1985, Ser. No. 737,961

Int. Cl.[4] B05D *7/00*; B32B *5/16, 9/00*; F26B *5/06*

U.S. Cl. 428—407 6 Claims

1. A method for the preparation of highly reagglomeration-resistant, free-flowing solid polymer particles, comprising grinding said polymer to a desired size and coating the polymer particles with alumina.

5. Free-flowing, reagglomeration-resistant solid polymer particles coated with alumina which remain friable and free-flowing after being subjected to a compressive force of 10,000 pounds per square inch for a time of one minute.

4,584,245

LAMINATED SAFETY GLASS

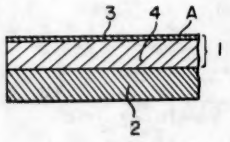
Kazuhiko Kuga; Hiroshi Washita; Hiroyuki Watanabe; Kohji Kurita, and Takeshi Harada, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 31, 1983, Ser. No. 499,790

Claims priority, application Japan, Jun. 8, 1982, 57-96952; Jun. 8, 1982, 57-96953; Jun. 25, 1982, 57-108473; Aug. 27, 1982, 57-147830

Int. Cl.[4] B32B *27/40, 7/02*

U.S. Cl. 428—409 13 Claims



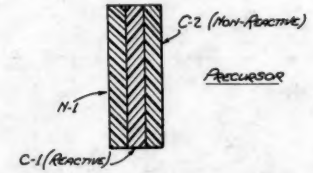
1. A transparent or translucent laminated safety glass having an at least two layered structure, comprising:

a polyurethane thermoplastic resin layer deposited on a hard substance, the exposed surface of said polyurethane resin layer having a cross-linked structure which is formed by the light or moisture initiated cross-linking of cross-linkable functional groups, the resin of said exposed surface containing carboxylic acid groups.

4,584,246
BIPOLAR MEMBRANES

Kang-Jen Liu, Bridgewater, and Ho-Lun Lee, New Providence, both of N.J., assignors to Chinese Petroleum Corp., Taipei, Taiwan

Filed Nov. 23, 1983, Ser. No. 554,792
Int. Cl.[4] B32B *27/30*
U.S. Cl. 428—522 11 Claims



1. A laminate structure useful in the manufacture of bipolar membranes which comprises:

(1) an anionic or a cationic ion-exchange layer;

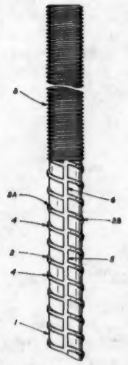
(2) a non-ionic layer containing chemically reactive sites which, when reacted, will form an ion-exchange layer having a charge opposite to the ion-exchange layer 1;

(3) an intermediate layer interposed between said layers 1 and 2 and having ion-exchange domains of the same charge as layer 1 and reactive sites which, when reacted, will form ion-exchange domains having the same charge as layer 2.

4,584,247
THREADING DEFORMED BARS

Jack R. Mulholland, Beaumaris, Australia, assignor to The Titan Manufacturing Co. Pty. Ltd., Victoria, Australia

Continuation-in-part of Ser. No. 294,609, Aug. 20, 1981, abandoned. This application Nov. 29, 1983, Ser. No. 555,931
Int. Cl.[4] E04C *5/00*; B21H *3/02*
U.S. Cl. 428—592 6 Claims

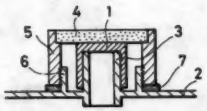


1. A hot rolled steel deformed standard threaded bar comprising at least one end thereof a portion having a plurality of substantially regular surface deformations and at the other end of said bar a threaded portion having a continuous uniform standard thread of substantially constant pitch circle formed thereon by rolling, using conventional techniques, a bar portion originally having a plurality of deformations substantially identical with those contained on said at least one end of said bar, the average volume per unit length of material in the threaded portion of said bar being substantially equal to the average volume per unit length of material in the deformed portion of said bar.

4,584,248
SEALED LEAD-ACID SECONDARY CELL

Masashi Iwata, Kyoto, Japan, assignor to Japan Storage Battery Company Limited, Kyoto, Japan

Filed Oct. 3, 1984, Ser. No. 657,439
Int. Cl.[4] H01M *2/12*
U.S. Cl. 429—54 5 Claims

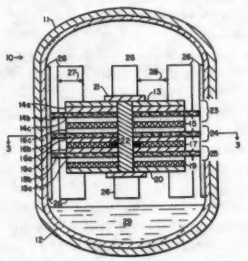


1. A sealed lead-acid secondary cell of the type that absorbs oxygen by the negative electrode, characterized in that a cylindrical safety valve having side walls and a closed end is provided to cover a cylindrical valve seat such that said side wall surrounds said valve seat and a tubular porous member impregnated with an oxidation retardant liquid substance is in contact with said safety valve.

4,584,249
OXYGEN RECOMBINATION IN INDIVIDUAL PRESSURE VESSEL NICKEL-HYDROGEN BATTERIES

John J. Smithrick, Cleveland, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 27, 1984, Ser. No. 625,077
Int. Cl.[4] H01M *10/34*
U.S. Cl. 429—57 18 Claims



1. An improved metal-hydrogen (H_2) cell of the type comprising a pressure vessel pressurized with H_2 and including an electrolyte and a stack of electrical cell units disposed in said pressure vessel in back-to-back relationship with gas screens positioned between adjacent electrical units; the improvement comprising one or more sites of catalytic material disposed on the inner surface of the pressure vessel and wherein each electrical cell unit includes a separator plate having edges in contact with a porous ceramic wick coating disposed on a portion of the pressure vessel interior and partially immersed in a supply of electrolyte whereby electrolyte is wicked to the separators, the separator edges being notched whereby gases in the cell flow adjacent to the catalytic sites to maximize recombination of O_2 generated by operation of the cell with H_2 outside of the electrical cell units on the pressure vessel catalytic sites whereby the heat of recombination is effectively removed from the cell.

4,584,250

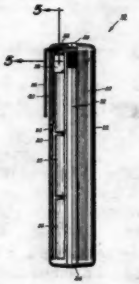
BATTERY WITH SLIDEABLY RETRACTABLE ATTACHMENT MEANS

John W. Hooke, High Springs, and Danny F. Rockett, Alachua, both of Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Jan. 5, 1984, Ser. No. 568,474

Int. Cl.[4] H01M 2/10

U.S. Cl. 429—97 **9 Claims**



1. A portable battery comprising:

a plurality of rechargeable electrochemical cells;

a generally hollow battery case for housing said plurality of electrochemical cells, said case having at least two opposed major walls disposed generally parallel to each other and defining therebetween a space for housing said electrochemical cells;

a clip adapted for use in supporting said battery case, said clip having a first leg extending generally parallel to one of said major walls and a second leg extending generally transverse to said one of said major walls, said second leg including a deflectable portion;

means for mounting said clip on said battery case, said mounting means slideably supporting reciprocating movement of said clip in said transverse direction from a first retracted position wherein said first leg of claim clip is disposed immediately adjacent said one of said walls to a second extended position wherein said first leg of said clip is spaced apart from said one of said walls whereby said clip may be utilized to support said battery case; and

means disposed on said battery case for limiting movement of said clip away from said one of said walls in said transverse direction, said deflectable portion of said second leg deflectable in a direction parallel to said opposed walls upon first insertion of said second leg into said space to thereby cooperate with said movement limiting means to entrap said deflectable portion within said space and permanently affix said clip to said case.

4,584,251

SOLID ELECTROLYTE CELL AND IODINE-DOPED METAL COMPLEXES AS THE CATHODE MATERIAL

Max Hunziker, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

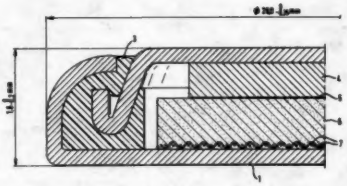
Filed Dec. 12, 1984, Ser. No. 680,682

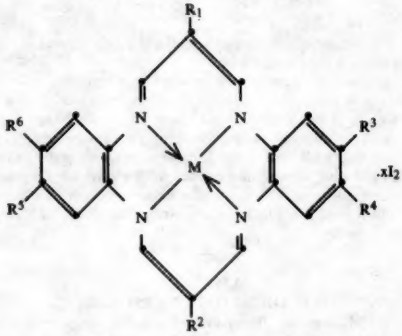
Claims priority, application Switzerland, Dec. 23, 1983, 6884/83

Int. Cl.[4] H01M 4/60

U.S. Cl. 429—191 **8 Claims**

1. A solid electrolyte call containing a solid anode made of lithium or silver, a solid lithium iodide or silver iodide electrolyte and a charge-transfer complex consisting of a metal complex, and iodine as the cathode, wherein the cathode consists of an iodine-doped complex or a mixture thereof with iodine having the formula I





in which M is a divalent metal atom belonging to the group consisting of Fe, Co, Ni, Cu, Zn, Pd and Pt, R^1 and R^2 independently of one another are a hydrogen atom or alkyl, cycloalkyl, aryl, aralkyl, alkaralkyl or acyl each of which is unsubstituted or substituted, R^3, R^4, R^5 and R^6 independently of one another are a hydrogen atom, alkyl, alkoxy, alkylthio and alkoxycarbonyl having 1 to 8 C atoms, aryloxy or halogen, or R^3 and R^4 and also R^5 and R^6 together are $—(CH_2)_n$ in which n=3, 4 or 5, $—O(CH_2)_mO—$ in which m=1 to 4 or a radical of the formula —CH=CH—CH=CH—, and x is a rational number from 1 to 300.

4,584,252

INSERTION COMPOUNDS OF GRAPHITE WITH IMPROVED PERFORMANCES AND ELECTROCHEMICAL APPLICATIONS OF THOSE COMPOUNDS

Philippe Touzain, St. Ismier; Rachid Yazami, Domene, and Jacques Maire, Paris, all of France, assignors to Le Carbone Lorraine, S.A., France

Filed May 21, 1984, Ser. No. 612,437

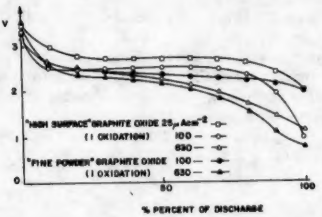
Claims priority, application France, May 19, 1983, 84 08266; Apr. 13, 1984, 84 06365

Int. Cl.[4] H01M 4/02; C01B 31/00

U.S. Cl. 429—209 **7 Claims**

1. An electrochemical generator electrode comprising a

graphite oxide mixed with a graphite insertion compound with a chloride of a transition metal, said graphite oxide being ob-



tained from a graphite having a specific surface area of at least 100 m^2/g, and a granulometry at most equal to 4 microns.

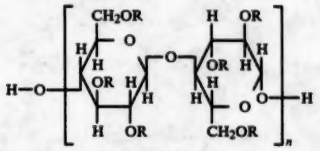
4,584,253

ELECTROPHOTOGRAPHIC IMAGING SYSTEM

John W. Lin, and Lesley P. Dudek, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 24, 1984, Ser. No. 686,046
The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.
Int. Cl.[4] G03G 5/14, 5/04
U.S. Cl. 430—59 16 Claims

1. An electrophotographic imaging member comprising a hole transport layer comprising an aromatic amine or hydrazone hole transport molecule in a continuous polymeric binder phase, a contiguous charge generation layer, and a cellulosic hole trapping material located in said charge generation layer or in a separate continuous layer having a thickness less than about 1 micrometer on the side of said charge generation layer opposite said hole transport layer, said charge generation layer comprising from about 0.01 percent by weight to about 15 percent by weight of said cellulosic hole trapping material based on the total weight of said charge generation layer, said separate layer comprising from about 0.01 percent by weight to about 100 percent by weight of said cellulosic hole trapping material based on the total weight of said separate layer, and said cellulosic hole trapping material being free of electron withdrawing groups and having the formula



wherein each R is independently selected from the group consisting of hydrogen and a substituted or unsubstituted group selected from the group consisting of an alkyl group containing 1 to 20 carbon atoms, a hydroxyalkyl group containing 1 to 20 carbon atoms, a hydroxyether group containing 1 to 20 carbon atoms and an aminoalkyl group containing 1 to 20 carbon atoms, and n is the number of cellulose repeating units from 1 to 3,000.

4,584,254

SILICONE RESIN COATED CARRIER PARTICLES FOR USE IN A TWO-COMPONENT DRY-TYPE DEVELOPER

Nobuhiro Nakayama; Tetsuo Isoda, both of Numazu; Yoichiro Watanabe, Fuji, and Mitsuo Aoki, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 26, 1985, Ser. No. 716,143
Claims priority, application Japan, Mar. 27, 1984, 59-57323
Int. Cl.[4] G03G 9/10
U.S. Cl. 430—108 7 Claims

1. In carrier particles for use in a two-component dry-type developer for developing latent electrostatic images, the improvement wherein the core particle comprises a core particle and a silicone resin layer coated on said core particle, said silicone resin layer containing an organic tin compound, which serves as a catalyst for hardening said silicone resin layer in the course of the formation of said silicone resin layer on said core particle under application of heat thereto, with a concentration gradient in the direction of the thickness of said silicone resin layer towards the outer surface of said carrier particles.

4,584,255

PHOTOGRAPHIC COLOR ELEMENTS HAVING HYDROPHILIC LAYERS CONTAINING HYDROPHOBES IN POLYMER PARTICLES

Herbert D. Remley, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 562,136, Dec. 16, 1983, abandoned.
This application Jun. 21, 1985, Ser. No. 746,946
Int. Cl.[4] G03C 5/14
U.S. Cl. 430—139 5 Claims

1. A color photographic paper product comprising a paper support having thereon a plurality of photographic color-forming silver halide emulsion layers, and between said support and said emulsion layers, a substantially crystal- and agglomeration-free hydrophilic layer comprising a hydrophilic composition comprising a hydrophilic binder and water-insoluble, crosslinked polyer particles dispersed therein, said polymer particles having recurring units characterized by the structure:

$$+A)_w+B)_x+C)_y$$

wherein —A— represents randomly recurring units derived from one or more vinyl aromatics or esters of α,β-unsaturated polymerizable carboxylic acids; —B— represents randomly recurring units derived from one or more monomers having one or more sulfo or carboxy moieties; —C— represents randomly recurring units derived from one or more diacrylates or dimethacrylates; w is from about 90 to about 100 weight percent; x is from 0 to about 5 weight percent; and y is from about 0 to about 5 weight percent based on total monomer weight, and wherein said polymer particles comprise less than about 5 weight percent of other randomly recurring units derived from one or more ethylenically unsaturated polymerizable monomers other than —A—, —B—, or —C—,

said hydrophilic composition comprising from about 15 to about 70 weight percent, based on total dry weight of said hydrophilic composition, of said polymer particles, and said polymer particles comprising from about 2 to about 5

percent, based on total monomer weight, of a hydrophobic optical brightener uniformly distributed throughout, said hydrophilic layer having less than 5 observable crystals of said brightener in a 8.9×11.4 cm area of said hydrophilic layer as observed at 250x magnification.

4,584,256

DIAZOTYPE MATERIALS WHICH CAN BE DEVELOPED BY HEAT AND CONTAIN AN ACTIVATOR PRECURSOR HAVING 2-CARBOXY CARBOXAMIDE GROUP RELEASING A STRONG BASE DURING HEATING

Claude Ceintrey, Neuville-les-Dieppe, and Michel Crochemore, Chaponost, both of France, assignors to Rhone-Poulenc Systemes, Creteil, France

PCT No. PCT/FR81/00151, § 371 Date Jul. 30, 1982, § 102(e) Date Jul. 30, 1982, PCT Pub. No. WO82/01944, PCT Pub. Date Jun. 10, 1982

Continuation of Ser. No. 403,613, Jul. 30, 1982, abandoned. This PCT application Nov. 19, 1981, Ser. No. 674,347

Claims priority, application France, Dec. 2, 1980, 80 25958

Int. Cl.⁴ G03C *1/60*

U.S. Cl. 430—159 **14 Claims**

1. A heat-developable diazotype material comprising a base material as a support and a multilayer sensitive layer supported on the base material and which contains as essential ingredients a diazonium salt, a coupler and a base generator as an activator precursor for the coupling reaction generating a coloured trace from said diazonium salt and said coupler, wherein no more than two of the essential ingredients are present in any one layer of the multilayer sensitive layer, the base generator being a salt comprising a basic component and an acid component, and the acid component being a 2-carboxycarboxamide group, the diazotype materials being characterized in that the basic component of the base generator consists of an alkali metal cation.

4,584,257

PHOTOGRAPHIC ELEMENTS CONTAINING NAPHTHYLSULFONYLETHYLTHIO HETEROCYCLE DEVELOPEMENT INHIBITOR PRECURSOR

Hisashi Okamura, and Yoshio Sakakibara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

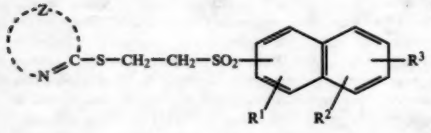
Continuation of Ser. No. 560,361, Dec. 12, 1983, abandoned. This application Apr. 18, 1985, Ser. No. 724,057

Claims priority, application Japan, Dec. 10, 1982, 57-216691

Int. Cl.⁴ G03C *1/40, 5/54, 1/34*

U.S. Cl. 430—219 **9 Claims**

1. A photographic element comprising a support having provided thereon at least one photosensitive silver halide emulsion layer, said photographic element containing a development inhibitor precursor represented by the following formula (II):



(II)

wherein Z represents a non-metallic atomic group necessary for completing an unsubstituted phenyltetrazole ring; R^1, R^2, and R^3, which may be the same or different, independently represent a hydrogen atom or a monovalent substituent with proviso that the total carbon atom number included in R^1, R^2, and R^3 is at least 4 and the moiety constituted by R^1, R^2, R^3 and the naphthalene ring is one for imparting a non-diffusable property to the compound of general formula (II) or the residual portion of the compound formed when the compound is split by development to release a silver halide development inhibitor, before and after the development.

3. A photographic element as claimed in claim 2, further comprising:

a dye image-forming compound associated with the emulsion layer,

an image-receiving element for fixing a diffusible dye formed from the dye image-forming compound to form an image;

an alkaline processing composition capable of developing the exposed photosensitive element; and

a neutralizing means for neutralizing the alkaline processing composition.

4,584,258

RECORDING AND INFORMATION RECORD ELEMENTS COMPRISING TELLUROPYRLIUM DYES

Michael R. Detty, and Harold T. Thomas, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 16, 1984, Ser. No. 672,013

Int. Cl.⁴ G03C *1/00*; G01D *15/34*

U.S. Cl. 430—270 **9 Claims**

1. A recording element comprising a support having coated thereon an optical recording layer of an amorphous composition comprising an infrared absorbing telluropyrylium dye and a binder; wherein the dye is present in the layer in an amount of at least 50% by weight of the dye and binder.

4,584,259

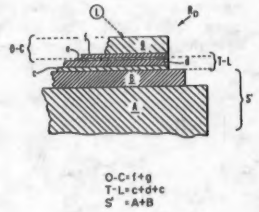
COATED MEDIA FOR OPTICAL RECORDING WITH ACRYLIC OVERCOAT

Thomas Mayer; Norman L. Boling, and James D. Rancourt, all of Santa Rosa, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 17, 1982, Ser. No. 450,771

Int. Cl.⁴ G03C *1/68*; G02B *27/22*

U.S. Cl. 430—273 **29 Claims**



1. In a record unit comprising a relatively flat disk recording surface with at least one thermal recording area wherein information is to be thermally recorded with prescribed laser radiation, the combination therewith of:

a hard protective outer-seal coating, so formulated and so applied to the outer surface of the recording area as to provide a mechanical/chemical barrier, while also being relatively transparent to said radiation, this coating being comprised of the self-leveling polymerization product of a formulation including at least one acrylate pre-polymer.

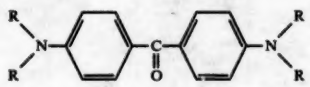
4,584,260

PHOTOPOLYMERIZABLE COMPOSITIONS WITH COMBINED PHOTOINITIATORS

Masayuki Iwasaki; Minoru Maeda, and Fumiaki Shinozaki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

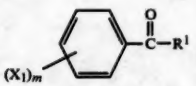
Continuation of Ser. No. 546,662, Oct. 28, 1983, abandoned. This application Jun. 6, 1985, Ser. No. 741,721
Claims priority, application Japan, Oct. 28, 1982, 57-189536
Int. Cl.[4] G03C 1/68
U.S. Cl. 430—288 12 Claims

1. A photopolymerizable composition having high sensitivity and providing a photohardenable layer having excellent layer strength comprising an addition polymerizable unsaturated compound containing at least two ethylenically unsaturated double bonds in the molecule thereof, a high molecular binder present in an amount of from 10 to 1,000 parts by weight based on 100 parts by weight of the polymerizable unsaturated compound, and photopolymerization initiators, wherein a 4,4-'bis(dialkylamino)-benzophenone represented by general formula I, a benzophenone derivative represented by general formula II and an organic compound selected from the group consisting of compounds represented by general formulae IIIa, IIIb, IIIc, IIId and IIIe are contained in said composition in combination as said photopolymerization initiators;



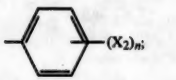
I

wherein R represents an alkyl, cycloalkyl or hydroxyalkyl group having 1 to 6 carbon atoms or is combined with another R substituted on the same nitrogen atom to form tetramethylene, pentamethylene or oxybisethylene;

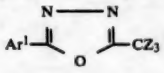


II

wherein R^1 represents a hydrogen atom or

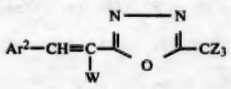


X_1 and X_2 each represents an alkyl group, an alkoxy group, a carboxy group, an alkoxycarbonyl group, an aryloxycarbonyl group or a halogen atom; m and n each represents 0, 1 or 2 and when m and n each represents 2, X_1 and X_2 may be the same or different;



IIIa

Ar^1: a substituted or unsubstituted phenyl or naphthyl group
Z: a chlorine or bromine atom

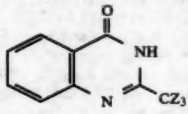


IIIb

Ar^2: a substituted or unsubstituted aryl group
W: a hydrogen atom, an alkyl group or an aryl group
Z: a chlorine or bromine atom

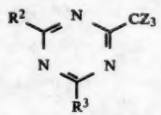
$Ar^3—SO_2CZ_3$ IIIc

Ar^3: a substituted or unsubstituted phenyl or naphthyl group
Z: a chlorine or bromine atom



IIId

Z: a chlorine or bromine atom



IIIe

R^2: CZ_3 or a substituted or unsubstituted phenyl or naphthyl group
R^3: CZ_3, NH_2, NHR^4, $N(R^4)_2$, SR^4, OR^4, or R^4
R^4: an alkyl, aryl or alkenyl group
Z: a chlorine or bromine atom

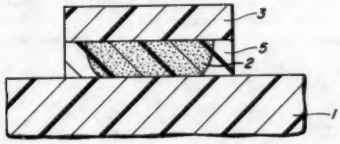
wherein each of said compounds of formulae I to II and compound having group III is contained in an amount of 0.1 to 50 parts by weight per 100 parts by weight of the polymerizable unsaturated compound, wherein the weight ratio of the compound represented by formula I to that of formula II is 1:20–10:1, wherein the weight ratio of the compound represented by formula I to that containing group of formula III is 1:20–10:1 and wherein the weight ratio of the compound represented by formula II to that containing group of formula III is 1:10–10:1.

4,584,261

PROCESS FOR ETCHING NONPHOTOSENSITIVE LAYER UNDER WASHOFF PHOTOPOLYMER LAYER

Robert P. Held, Englishtown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 27, 1984, Ser. No. 635,346
Int. Cl.[4] G03C 5/16; G03F 1/00; G03C 1/71; G03F 7/00
U.S. Cl. 430—294 12 Claims



1. A process for the preparation of a dot-etched photopolymerizable lithographic film which comprises
(a) exposing imagewise to actinic radiation a photopolymerizable element consisting essentially of a support bearing, in order,
(1) a nonphotosensitive layer of a caustic or water soluble polymeric binder having dispersed therein a chemically soluble pigment, and
(2) a layer of clear, unpigmented caustic or was soluble photopolymerizable composition comprising a caustic soluble binder;
(b) developing the exposed element with a caustic solution and then with water;
(c) treating the developed image with a solubilizing agent for

the pigment whereby the size of the pigmented area is reduced by diffusion etching of the image without affecting the optical density of the image.

4,584,262

PROCESS OF MAKING POST-STRETCH POLYESTER TERPOLYMER RESIN SUBS FOR POLYESTER SUPPORTS FOR PHOTOGRAPHIC ELEMENTS

Conrad E. Miller, Hendersonville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 639,540, Aug. 10, 1984, abandoned, which is a continuation of Ser. No. 382,572, May 27, 1982, abandoned. This application Nov. 16, 1984, Ser. No. 672,352

Int. Cl.[4] G03C *1/76*

U.S. Cl. 430—533 **6 Claims**

1. A process for preparing a photographic element comprising, in order, the steps of:

(1) biaxially orienting a polyester film by stretching and heat-setting;

(2) coating from an organic solvent a first subbing layer consisting essentially of a mixture of:

(a) a polyester resin prepared by the direct esterification of at least two different dicarboxylic acids and at least one diol; and,

(b) a diisocyanate curing agent in an amount of 3 to 10% by weight based on the weight of component (a);

(3) coating contiguous to the first subbing layer a second subbing layer consisting essentially of aqueous gelatin;

(4) heat-relaxing the coated polyester film; and

(5) coating a photosensitive, gelatino-silver halide emulsion layer contiguous to the second subbing layer.

4,584,263

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING PARTICLES OF REDOX COMPOUND AND —COO— CONTAINING POLYMER

Osamu Takahashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 8, 1985, Ser. No. 763,590

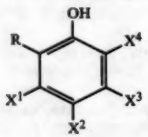
Claims priority, application Japan, Aug. 10, 1984, 59-167542

Int. Cl.[4] G03C *5/54, 1/40, 1/48, 1/04*

U.S. Cl. 430—533 **10 Claims**

1. A photographic light-sensitive material comprising a support having thereon at least one combination of a silver halide photographic emulsion layer and associated therewith a dye-providing compound capable of imagewise forming a mobile dye as a result of imagewise light exposure and photographic development, said silver halide photographic emulsion layer or a layer containing said dye-providing compound having dispersed, in a hydrophilic colloid a water-insoluble and organic solvent-soluble homopolymer or copolymer having as the main chain or a side chain thereof a repeating unit including a

bond and a redox compound represented by formula (I) as combined particles;

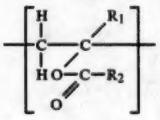


(I)

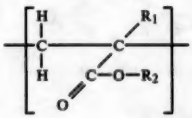
wherein R represents a hydrogen atom; a substituted or unsubstituted alkyl group, aryl group, acylamino group, alkoxy group, aryloxy group, alkylthio group, arylthio group, carbamoyl group, acyl group, alkoxycarbonyl group, aryloxycarbonyl group, sulfamoyl group, alkylsulfonyl group, or arylsulfonyl group; a halogen atom; a carboxy group; or a sulfon group; two of X^1, X^2, X^3, and X^4 represent members selected from the group consisting of a hydroxy group or a sulfonamido group having 1 or more carbon atoms, and the other two thereof each represents a member selected from the atoms and group as defined above for R; or R and X^1 together form a carbocyclic or heterocyclic group; and the total number of carbon atoms of R, X^1, X^2, X^3, and X^4 is sufficiently large to immobilize the redox compound in a hydrophilic colloid layer.

10. A photographic light-sensitive material as in claim 1, wherein the water-insoluble and organic solvent-soluble homopolymer or copolymer having as the main chain or a side chain thereof a repeating unit including

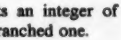
bond is selected from (A) homopolymers and copolymers each having the repeating unit shown by the following formula



wherein R_1 represents hydrogen atom or an alkyl group (including a substituted alkyl group) and R_2 represents an alkyl group (including a substituted alkyl group) or an aryl group (including a substituted aryl group); (B) homopolymers and copolymers each having the repeating unit shown by the following formula



wherein R_1 and R_2 have the same significance as described in (A); (C) polyester obtained by the condensation of polyhydric alcohols and polybasic acids; and (D) polyesters having the following repeating unit



wherein m represents an integer of 4 to 7 and the chain —CH_2— may be a branched one.

4,584,264

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Nobutaka Ohki, and Yoshinobu Yoshida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 606,487, May 3, 1984, abandoned. This application May 20, 1985, Ser. No. 735,925

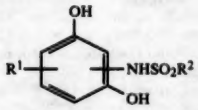
Claims priority, application Japan, May 4, 1983, 58-78606

Int. Cl.[4] G03C *7/26*

U.S. Cl. 430—542 **10 Claims**

1. A silver halide color photographic light-sensitive material

containing a compound represented by the general formula (II) as a color stain inhibitor



(II)

wherein:

R^1 is a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an acylamino group, an alkylthio group, an alkoxycarbonyl group, an aryloxycarbonyl group, a sulfamoylamino group, a carbamoylamino group, an arysulfonamido group, an alkylsulfonamide group, an acyl group, a sulfonyl group, or a carbamoyl group each of which groups may be substituted; and

R^2 is an alkyl group, an aryl group or an amino group which may be unsubstituted or substituted.

4,584,265

COLOR-PHOTOGRAPHIC RECORDING MATERIAL

David G. Leppard, Marly, and Jean Rody, Riehen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 552,910, Nov. 17, 1983, abandoned.
This application May 14, 1985, Ser. No. 734,233
Claims priority, application Switzerland, Nov. 18, 1982, 6735/82
Int. Cl.[4] G03C 7/26
U.S. Cl. 430—551 13 Claims

1. A colour-photographic recording material which, in at least a light-sensitive silver halide emulsion layer, an intermediate layer, an image-receiving layer/and or a protective layer, contains, as a stabiliser, a light stabilizing amount of at least one s-triazone compound which contains in its molecule at least one sterically hindered phenol group and at least one polyalkylpiperidine group.

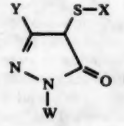
4,584,266

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Takeshi Hirose; Kotaro Nakamura, and Nobuo Furutachi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 30, 1985, Ser. No. 696,609
Claims priority, application Japan, Jan. 31, 1984, 59-15503
Int. Cl.[4] G03C 7/38
U.S. Cl. 430—555 38 Claims

1. A silver halide color photographic light-sensitive material comprising a support having coated thereon at least one silver halide emulsion layer, the color photographic light-sensitive material having a photographic layer containing at least 2-equivalent 5-pyrazolone type magenta coupler represented by the general formula (I) described below and an amount of a calcium atom contained in the color photographic light-sensitive material being up to 10 mg/m^2:



(I)

wherein W represents an aryl group; X represents an aliphatic group, an aryl group or a heterocyclic group; and Y represents an acylamino group, a ureido group or an anilino group.

4,584,267

THERMALLY DEVELOPABLE, LIGHT-SENSITIVE MATERIAL

Toyoaki Masukawa, Hinode, and Kunihiro Koshizuka, Hino, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1984, Ser. No. 650,815
Claims priority, application Japan, Sep. 16, 1983, 58-169321
Int. Cl.[4] G03C 1/02
U.S. Cl. 430—619 6 Claims

1. A thermally developable, light-sensitive material having at least one thermally developable, light-sensitive layer formed on a support which comprises (a) a light-sensitive silver halide, (b) an organic silver salt, (c) a reducing agent and (d) a binder, said binder containing gelatin and/or a gelatin derivative and a poly(vinyl alcohol) having a viscosity average polymerization degree of not more than 700.

4,584,268

METHOD AND COMPOSITIONS FOR CARCINOMA DIAGNOSIS

Roberto L. Ceriani, 1089 Via Roble, Lafayette, Calif. 94549, and Jerry A. Peterson, 5916 Chabot Rd., Oakland, Calif. 94618

Continuation of Ser. No. 310,952, Oct. 18, 1981, abandoned.
This application Feb. 24, 1984, Ser. No. 583,456
Int. Cl.[4] G01N 33/54, 33/56; B65D 71/00
U.S. Cl. 435—7 16 Claims

1. An assay method for detecting the presence of neoplastic mammary epithelial tissue from a solid tumor or metastasis of a mammary organ of a mammalian host which comprises:

combining a serum or plasma sample of said host with antibodies specific for at least one surface antigen specific for a normal differentiated epithelial cell of said mammary organ, wherein any of said surface antigen present in said serum or plasma binds to said antibodies to form an antigen-antibody complex;

determining the amount of said complex; and

comparing the amount of said complex in said serum or plasma with the amount of complex in a mammalian host free of neoplastic tissue of said mammary organ.

4,584,269

METHOD FOR STABILIZING THE ENZYMATIC ACTIVITY OF PHENYLALANINE AMMONIA LYASE DURING L-PHENYLALANINE PRODUCTION

Patricia J. Vollmer, Olney; Jeffrey J. Schruben, Rockville; John P. Montgomery, Clarksburg, and Huei-Hsuing Yang, Rockville, all of Md., assignors to Genex Corporation, Rockville, Md.

Filed Oct. 31, 1983, Ser. No. 547,258
Int. Cl.[4] C12P 13/22; C12N 9/88, 9/96; C12R 1/645
U.S. Cl. 435—108 16 Claims

1. A method for producing L-phenylalanine which comprises:

(a) combining phenylallanine ammonia-lyase with t-cinnamate and ammonium ions under substantially anaerobic, static L-phenylalanine-producing conditions to produce L-phenylalanine; and

(b) recovering the L-phenylalanine so produced.

4,584,270

PROCESS FOR PREPARING OPTICALLY-ACTIVE 4-AMINO-3-HYDROXYBUTYRIC ACID

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 23, 1984, Ser. No. 573,247
Int. Cl.[4] C12P 13/00; C12R 1/01; C07C 101/30, 119/042
U.S. Cl. 435—128 9 Claims

1. A method for preparing optically active 4-amino-3-hydroxybutyric acid which comprises

subjecting a β-hydroxyglutaric diester having the formula $RO_2CCH_2—CHOHCH_2CO_2R$, where R is selected from

the group consisting of CH_3 and CH_2CH_3, to asymmetric hydrolysis by exposing it to the fermentative action of the carboxyesterase enzyme elaborated by a microorganism selected from the genera consisting of Arthrobacter, Corynebacterium, Acinetobacter, Citrobacter, Mycobacterium and Rhodococcus and recovering the corresponding optically-active β-acyloxy glutaric monoester

protecting the hydroxyl function present in said monoester

subjecting the thus protected monoester to rearrangement to obtain the corresponding isocyanate

subjecting said isocyanate to alkaline hydrolysis and

recovering optically-active 4-amino-3-hydroxybutyric acid.

7. A method for preparing optically active 4-amino-3-hydroxybutyric acid which comprises

converting ethyl hydrogen β-acetoxyglutarate to its acid chloride by treating said glutarate with an acyl chloride

subjecting the thus formed ethyl hydrogen β-acetoxy glutarate acid chloride to rearrangement to obtain the corresponding isocyanate

subjecting said isocyanate to alkaline hydrolysis and

recovering optically active 4-amino-3-hydroxybutyric acid.

4,584,271

BACTERIAL REGENERATION APPARATUS AND PROCESS

Jay L. Stern, Los Angeles; Herbert W. Spencer, III, Valencia, and Alon Lebel, Los Angeles, all of Calif., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Sep. 28, 1983, Ser. No. 536,887

Int. Cl.[4] C12P *5/02, 3/00;* **C12N** *11/14;* **C10G** *32/00;* **C12M** *1/40, 1/02;* **C02F** *3/00*

U.S. Cl. 435—167 **34 Claims**

1. Apparatus for reducing sulfate contained within a flowable material comprising

deoxygenation means for removing oxygen from a flowable material containing sulfate,

slug reactor means for processing said deoxygenated flowable material to reduce at least a portion of said sulfate to sulfide,

anaerobic bacteria means disposed in said slug reactor means for reducing at least a portion of said sulfate,

said anaerobic bacteria including at least one microorganism strain selected from the group consisting of Desulfovibrio and Desulfotomaculum,

separation means for receiving flowable material from said slug reactor and separating the same into supernatant containing sulfate and sludge components,

means for delivering said sludge component to said slug reactor means,

film reactor means for receiving and processing said supernatant component to reduce at least a portion of said sulfate to sulfide,

means for delivering said supernatant component to said film reactor means,

said slug reactor means and said film reactor means each being sealed to resist entry of oxygen,

anaerobic bacteria means disposed in said film reactor means for reducing at least a portion of the sulfate contained in said supernatant, and

at least one of said slug reactor means and said film reactor means containing nutrient media for sustaining growth of said anaerobic bacteria.

4,584,272

ADENYLATE KINASE AND PROCESS FOR THE PRODUCTION THEREOF

Kazutomo Imahori, No. 2-25-23, Kakinokisaka, Meguro-ku, Tokyo; Hiroshi Nakajima, and Kazuhiko Nagata, both of Kyoto, all of Japan, assignors to Unitika Ltd.; Rikagaku Kenkyusho and Kazutomo Imahori, all of, Japan

Filed Oct. 7, 1981, Ser. No. 309,346

Claims priority, application Japan, Oct. 9, 1980, 55-141405; Oct. 9, 1980, 55-141406

Int. Cl.[4] C12N *9/12;* **C12P** *19/32;* **C12R** *1/07*

U.S. Cl. 435—194 **5 Claims**

1. A process for producing a heat-resistant adenylate kinase which comprises cultivating a bacterium belonging to the genus Bacillus having the ability to produce a heat-resistant adenylate kinase, and collecting therefrom heat-resistant adenylate kinase whose activity after an incubation in a buffer solution at about 50° C. for about 15 minutes is at least about 80% of the original activity prior to the incubation.

4,584,273

METHOD FOR THE PRODUCTION OF PHENYLALANINE AMMONIA-LYASE BY FERMENTATION

Malcolm A. J. Finkelman, Gaithersburg, and Huei-Hsuing Yang, Rockville, both of Md., assignors to Genex Corporation, Rockville, Md.

Filed Oct. 31, 1983, Ser. No. 547,139

Int. Cl.[4] C12N *9/88;* **C12P** *13/22*

U.S. Cl. 435—232 **14 Claims**

1. A process for producing phenylalanine ammonia-lyase, which comprises cultivating a phenylalanine ammonia-lyase-producing microorganism of the genus Rhodotorula or Rhodosporidium under aerobic growth-promoting conditions; inducing said microorganism to make phenylalanine ammonia-lyase under phenylalanine ammonia-lyase-producing conditions; and, following induction of phenylalanine ammonia-lyase production, subjecting the resulting fermentation medium to substantially anaerobic-static conditions.

4,584,274

BACTERIOPHAGE-RESISTANT PLANT GROWTH PROMOTING RHIZOBACTERIA

Trevor V. Suslow, Kensington, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Feb. 9, 1983, Ser. No. 465,082

Int. Cl.[4] C12N *1/20, 15/00;* **C12R** *1/40;* **A61K** *37/00*

U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of *Pseudomonas putida* SH5 PR3, American Type Culture Collection Accession No. 39270.

4,584,275

INCUBATOR

Shinichi Okano; Takashi Koizumi, and Tadashi Uekusa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 30, 1982, Ser. No. 403,380

Claims priority, application Japan, Jul. 31, 1981, 56-119355

Int. Cl.[4] C12M *1/38, 1/34;* **G01N** *21/00*

U.S. Cl. 435—290 **20 Claims**

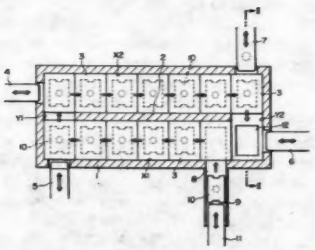
1. An incubator, comprising:

an enclosure defining a circulation path for guiding a plurality of chemical analysis units each carrying a material to be analyzed, said enclosure including an insertion inlet through which said chemical analysis measurement units are inserted into said circulation path at an insertion position of said circulation path, and a discharging outlet through which said chemical analysis measurement units are discharged at a discharge position of said circulation path;

means for maintaining said chemical analysis measurement units at a controlled temperature in said circulation path;

a plurality of carrier members each having a recess in a lower surface thereof for receiving a respective one of said chemical analysis units, said carrier members each comprising a box-shaped carrier having a sidewall portion and a top portion defining said recess, said sidewall portion having an inlet on one side thereof, said chemical analysis measurement units being inserted into said carriers through each said inlet; and

a plurality of pushing levers for moving said chemical analysis measurement units through the circulation path from said inlet to said outlet.



4,584,276

METHOD FOR ANALYSIS OF ANIONS

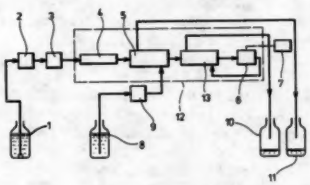
Yuzuru Hanaoka; Takeshi Murayama; Setsuo Muramoto, and Tamizo Matsuura, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Division of Ser. No. 385,570, Jun. 7, 1982, Pat. No. 4,533,518. This application Feb. 15, 1985, Ser. No. 701,996

Claims priority, application Japan, Feb. 5, 1982, 57-17121

Int. Cl.[4] G01N *30/14, 30/96;* **B01D** *13/00*

U.S. Cl. 436—150 **3 Claims**



1. A method for analysis of a trace amount of an anion in a sample solution comprising the steps of injecting a sample solution comprising water and an anion into a stream of eluant solution comprising alkali metal carbonates and bicarbonates; passing said sample solution, as carried in said eluant solution, to a separation column packed with an anion-exchange resin to separate the anion in said sample solution; passing an effluent solution from said separation column to a decationizer means packed with a cation-exchange composition to convert the alkali metal carbonates and bicarbonates to carbonic acid; then passing the effluent solution from said decationizer means to a water dip effect removing means wherein said water dip effect removing means comprises two compartments separated by a membrane pervious to carbon dioxide or carbonic acid and impervious to anions and wherein the effluent solution from said decationizer means is passed through one of said compartments and a solution of carbon dioxide or carbonic acid is passed through the outher of said compartments so as to pass carbon dioxide or carbonic acid into said effluent solution through the membrane; and thereafter passing the effluent solution from said water dip effect removing means to a conductivity detector and measuring the conductivity of the effluent solutin to determine the amount of said anion in the sample solution, whereby said water dip effect removing means substantially removes the impact of the water dip effect of water in the sample solution on conductivity of the effluent solution as measured by said conductivity detector.

4,584,277

FLUORESCENT MULTIPARAMETER PARTICLE ANALYSIS

Edwin F. Ullman, Atherton, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 5, 1983, Ser. No. 482,124

Int. Cl.[4] G01N *33/566, 33/543, 33/544, 33/545*

U.S. Cl. 436—501 **7 Claims**

1. A method for human blood typing to determine the parameters ABO, αA and αB, wherein α intends antibody, in a single assay medium, employing two fluorescers, F_1 and F_2, having different emission maxima, said fluorescers joined to αA and αB to provide αA-F_1, and αB-F_2, and A and B phenotype particles distinguishable from native erythrocytes, by means of a detectable light signal, said method comprising:

combining in an assay medium a sample obtained from blood, αA-F_1, and αB-F_2 and said A and B phenotype particles wherein reciprocal binding members bind with each other;

irradiating at least a portion of said assay medium with excitation light for F_1 and F_2;

detecting fluorescence from F_1 and F_2 in relation to said particles and erythrocytes in said blood to determine if F_1 and F_2 are bound to said particles and to said erythrocytes, respectively, wherein signals are produced to distinguish each parameter present in said medium, and

relating said fluorescence to the blood type and to the presence of αA and αB.

4,584,278

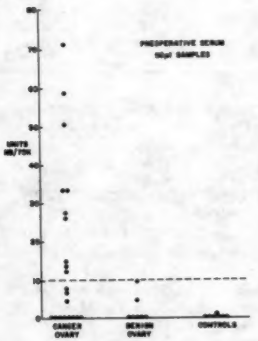
ANTIGEN DERIVED FROM HUMAN OVARIAN TUMORS AND RADIOIMMUNOASSAY USING THE ANTIGEN

Suzanne Knauf, Fairport, N.Y., assignor to University of Rochester, Rochester, N.Y.

Continuation-in-part of Ser. No. 360,023, Mar. 19, 1982, abandoned. This application Jan. 28, 1983, Ser. No. 461,770

Int. Cl.[4] G01N *33/56*

U.S. Cl. 436—542 **18 Claims**



1. The method of isolation of and purification of an antigen, NB/70K which is specific for ovarian carcinomas, which comprises the steps of incubating an extract of cells, isolated from an ovarian tumor which contain a Fraction OCA, OCB, OCC or OCD, with an antibody which binds to ovarian tissue antigens but does not bind to the ovarian tumor specific anti-

gen NB/70K and separating the unbound, tumor specific antigen NB/70K from the incubation mixture.

15. An improved radioimmunoassay, the Triton NB/70K assay, to detect the presence of an ovarian tumor specific antigen, NB/70K, and the amount of NB/70K present, comprising the steps of isolating Fraction OCC, or OCA, or OCB, or OCD, NB/70K, or isolating serum, adding said isolate, containing known or unknown amounts of said antigen, and PBS to a container, adding anti-NB/70K, in a Triton-EDTA buffer, to said container, allowing sufficient time for anti-NB/70K to react with said isolate, after said time has expired adding a radioiodinated NB/70K to said container, allowing sufficient time for said radioiodinated NB/70K to react with a complex of said anti-NB/70K and isolate, adding a 5% (w/v) Staphylococcus aureus of the Cowan I strain bearing protein A, in Triton-EDTA, solution to said container, centrifuging the container, decanting the supernatant and counting the radioactivity of the resulting pellet.

4,584,279
OPTICAL GLASS WITH REFRACTIVE INDICES >1.90, ABBE NUMBERS >25 AND HIGH CHEMICAL STABILITY

Danuta Grabowski, Wiesbaden; Ludwig Ross, Klein-Winternheim; Volkmar Geller, Mainz-Finthen; Karl Mennemann, Taunusstein, and Georg Gliemeroth, Mainz-Finten, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Nov. 20, 1984, Ser. No. 673,317

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1983, 3343418

Int. Cl.[4] C03C *3/068, 4/00*

U.S. Cl. 501—78 **19 Claims**

1. Optical glass with refractive indices ≧1.90, Abbe numbers ≧25 and particularly good chemical stability (erosion times for 1 um from a polished surface by 0.5 n HNO_3 more than 50 hours) as well as high crystallization stability in the viscosity range <100 dPas, consisting essentially of, in percent by weight:

SiO_2	0–10
B_2O_3	2–20
Al_2O_3	0–2
Σ SiO_2, B_2O_3, Al_2O_3	7.5–25
TiO_2	1–16
ZrO_2	0–10
La_2O_3	35–55
Y_2O_3	0.5–10
Nb_2O_5	0.5–15
Gd_2O_3	0–10
Ta_2O_5	0–15
P_2O_5	0–3

wherein the ratio of SiO_2 to B_2O_3 is between 0.1 and 1.6, and the sum of Nb_2O_5 Ta_2O_5 is from 9 to 20% by weight.

4,584,280
POROUS CERAMIC THIN FILM AND PROCESS FOR PREPARING THE SAME

Tsutomu Nanao, and Tamiyuki Eguchi, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 11, 1984, Ser. No. 609,389

Claims priority, application Japan, May 13, 1983, 58-84795

Int. Cl.[4] C04B *38/00;* **B32B** *7/00*

U.S. Cl. 501—80 **14 Claims**

1. A process for preparing a porous ceramic thin film on a substrate which comprises applying an anhydrous solution comprising a metal alkoxide and an organic compound having at least two hydroxyl groups to a substrate, and thermally decomposing said metal alkoxide and organic compond having at least two hydroxyl groups at a temperature of not less than 200° C., whereby said porous ceramic thin film has a pore size of not more than 10 μm, a ratio of pore opening surface area to total surface area of 10% to 90%, and a thickness of not more than 50 μm.

2. The process of claim 1, wherein said metal alkoxide is a member selected from the group consisting of metal alkoxides represented by the formulas: $M^1(OR^1)_n$, $M^1(OR^2)_a(OR^3)_b$, $M^1(Q)_a(OR^1)_b$ and $M^1[M^2(OR^1)_m]_n$

wherein each of M^1 and M2 is a metal atom selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, beryllium, magnesium, calcium, strontium, barium, titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, manganese, iron, nickel, cobalt, copper, zinc, cadmium, mercury, boron, aluminum, gallium, indium, thallium, silicon, germanium, tin, lead, arsenic, antimony, bismuth, yttrium, selenium, tellurium, and a lanthanoid metal; R^1, R^2 and R^3 are the same or different organic residues; each of n and m is an integer provided that in $M^1(OR^1)_n$, n is equal to the valency of M^1, and in $M^1[M^2(OR^1)_m]_n$, m and n satisfy the equation: (m - valency of M^2)×n=valency of M^1; each of a and b is an integer and the sum of a and b is the valency of the metal M^1; Q is a member selected from the group consisting of a halogen, hydroxyl, a carboxylic acid residue having 1 to 20 carbon atoms and a diketone residue having 1 to 20 carbon atoms.

4,584,281
CONTROLLED DELIVERY OF IMMISCIBLE MATERIALS INTO AN AQUEOUS SYSTEM

Lary L. Foley, San Francisco, Calif., assignor to The Clorox Company, Oakland, Calif.

Division of Ser. No. 303,472, Sep. 18, 1981, Pat. No. 4,440,542. This application Mar. 23, 1984, Ser. No. 581,146

Int. Cl.[4] C04B *38/00*

U.S. Cl. 501—85 **3 Claims**

1. A method of producing a water soluble foam structure from an aqueous gel including silica-silicate and about 70 to 75% by weight water comprising driving a portion of said water off from the aqueous gel by applying microwave energy to said gel to thereby produce a foamed structure.

4,584,282
DIELECTRIC CERAMIC COMPOSITION

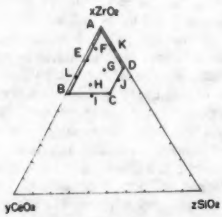
Kazuo Sasazawa, and Nobutatsu Yamaoka, both of Tokyo, Japan, assignors to Taiyo Yuden Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1985, Ser. No. 692,439

Claims priority, application Japan, Jan. 23, 1984, 59-11489

Int. Cl.[4] C04B *35/46, 35/49*

U.S. Cl. 501—136 **5 Claims**



1. A dielectric ceramic composition consisting essentially of $xZrO_2$-$yCeO_2$-$zSiO_2$-TiO_2, in which x+y+z=1, and x, y and z are mole fractions that lie on or within the four-sided polygon in the ternary composition diagram shown in the attached drawing, wherein the corners of said polygon are points A, B, C and D that are defined by the following coordinates:

	x	y	z
A	0.98	0.01	0.01
B	0.60	0.39	0.01
C	0.60	0.18	0.22
D	0.77	0.01	0.22.

4,584,283

CRACKING CATALYST RESTORATION WITH ALUMINUM COMPOUNDS

Brent J. Bertus; H. Wayne Mark, and Dwight L. McKay, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 175,622, Aug. 5, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 427,256

Int. Cl.[4] **B01J** *29/38;* **C10G** *11/05, 11/18*

U.S. Cl. 502—31 **6 Claims**

1. A process comprising contacting a zeolite modified cracking catalyst having deposited thereon at least 3,000 parts per million vanadium equivalents of contaminants selected from the group consisting of nickel, vanadium and iron with a treating agent compound represented by the formula $(RX_2PX_2)_3Al$ wherein each X is independently selected from the group consisting of oxygen and sulfur and at least one X is sulfur, and wherein R is a hydrocarbyl group having from 1 to about 20 carbon atoms so as to deposit an amount of treating agent on said cracking catalyst sufficient to reduce the deleterious effects of said contaminants.

2. A process as in claim 1 wherein the treating agent compound is mixed with a hydrocarbon feedstock and contacted with the cracking catalyst in the cracking zone of a catalytic cracking reactor.

3. A process comprising contacting a zeolite modified cracking catalyst having deposited thereon at least 3000 parts per million vanadium equivalents of contaminants selected from the group consisting of nickel, vanadium and iron with a treating agent compound represented by the formula $((RO)_2PS_2)_3Al$ wherein R is a hydrocarbyl broup having from 1 to about 20 carbon atoms so as to deposit an amount of treating agent on said cracking catalyst sufficient to reduce the deleterious effects of said contaminants.

4,584,284

BURSOPOIETIN

Tapan Audhya; Daniel J. Kroon, both of Bridgewater; George Heavner, Flemington, and Gideon Goldstein, Short Hills, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jan. 31, 1985, Ser. No. 681,971

Int. Cl.[4] **A61K** *37/24;* **C07K** *5/08;* **C08F** *283/00*

U.S. Cl. 514—18 **6 Claims**

1. A peptide of formula H-LYS-HIS-GLY-NH_2 and the pharmaceutically acceptable acid-addition salts thereof.

4,584,285

ANTIHYPERTENSIVE AGENTS

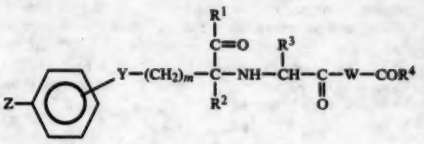
Ronald J. Doll, Maplewood; Bernard R. Neustadt, West Orange; Elizabeth M. Smith; Charles V. Magatti, both of Verona, and Elijah H. Gold, West Orange, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 500,494, Jun. 2, 1983, abandoned. This application Sep. 17, 1984, Ser. No. 651,378

Int. Cl.[4] **A61K** *37/00;* **C07C** *103/52;* **C07D** *409/00, 209/02, 209/04, 209/42, 209/96, 285/16, 217/00, 215/00, 209/44, 209/34*

U.S. Cl. 514—19 **27 Claims**

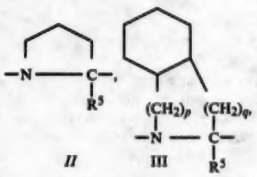
1. A compound represented by the formula:



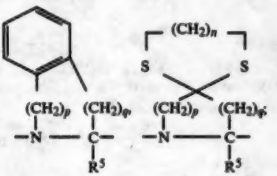
I

wherein

W is



II III



IV V

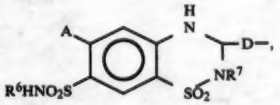
n is 0 or 1;

m is 0 to 2;

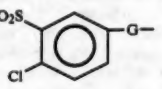
p and q are each 0, 1 or 2, provided that the sum of p and q is 1 or 2, and that in formula V, p is not 0;

Y is —CH_2—, —CH_2O—, or —CH_2S—, attached at the 2 or 4 position of phenyl group;

Z is



VI

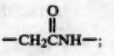


VII

wherein

A is Cl or CF_3;

D is —$(CH_2)_u$—, —CH_2O—, —CH_2S—;

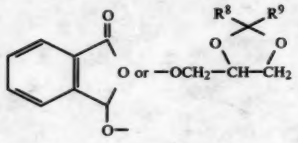


G is —$CONR^7(CH_2)_t$—, or —$SO_2NR^7(CH_2)_t$—;

t is 0 or 1;

R^1 and R^4 are independently hydroxy, alkoxy having from 1 to 8 carbon atoms, K—X_r—$(CH_2)_s$—O—, wherein K is phenyl, substituted phenyl, 1- or 2-naphthyl, X is oxygen or sulfur, r is 0 or 1 and s is 0 to 4, and wherein the substituents on the phenyl are chosen from group M, wherein M is halogen, hydroxy, trifluoromethyl, alkoxy having 1 to 6 carbon atoms, 2- and 3-furanyl, 2- and 3-thienyl and

phenyl (which phenyl group may be substituted with halogen, hydroxy, trifluoromethyl, alkoxy having from 1 to 6 carbon atoms or alkyl having from 1 to 6 carbon atoms), provided that when s is zero, r is zero, —OCH-$_2$OCO-alkyl wherein the alkyl has from 3 to 8 carbon atoms, —OCH_2CO-phenyl, wherein the phenyl may be substituted with group M, 1-glyceryl,



R^2, R^5, R^6 and R^9 are hydrogen or lower alkyl;
R^3 is hydrogen, lower alkyl or amino lower alkyl;
R^7 is hydrogen, lower alkyl or phenyl(lower)alkyl;
R^8 is hydrogen, lower alkyl, phenyl, or phenyl substituted by group M;
u is 1 or 2;
and the pharmaceutically acceptable salts thereof.

4,584,286

SYNTHESIS OF CRYSTALLINE SILICATE ZSM-35

Ernest W. Valyocsik, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 27, 1984, Ser. No. 625,377
Int. Cl.[4] C01B *33/28*; B01J *29/06*
U.S. Cl. 502—62 **13 Claims**

1. A method for synthesizing a crystalline silicate ZMS-35 exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, which comprises (i) preparing a mixture capable of forming said crystalline silicate, said mixture containing sources of alkali metal cations, an oxide of aluminum, bis(N-methylpyridyl)ethylinium cation, an oxide of silicon and water and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3	greater than	10 to 50
H_2O/SiO_2		5 to 200
OH^-/SiO_2		0.01 to 2.0
M/SiO_2		0.01 to 3.0
R/SiO_2		0.02 to 2.0

wherein M is said alkali metal cation and R is said bis(N-methylpyridyl)ethylinium cation, (ii) maintaining the mixture at a temperature of from about 80° C. to about 250° C. until cyrstals of the crystalline silicate are formed and (iii) recovering the crystalline silicate ZSM-35 from step (ii), said recovered crystalline silicate containing alkali metal and bis(N-methylpyridyl)ethylinium cations.

13. Bis(N-methylpyridly)ethylinium-containing ZSM-35.

4,584,287

RARE EARTH-CONTAINING Y ZEOLITE COMPOSITIONS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 569,238, Jan. 9, 1984, which is a division of Ser. No. 327,611, Dec. 4, 1981, Pat. No. 4,429,053. This application Apr. 15, 1985, Ser. No. 723,074
The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.
Int. Cl.[4] B01J *37/10*
U.S. Cl. 502—65 **36 Claims**

11. A hydrocarbon conversion catalyst comprising a porous refractory oxide component and a crystalline aluminosilicate zeolite containing a rare earth metal and a hydrogenation metal, said catalyst having been prepared by a process comprising:

(a) cation-exchanging a crystalline aluminosilicate zeolite having an X-ray diffraction pattern indicative of the Y crystal structure with rare earth-containing cations;
(b) calcining the resultant rare earth-exchanged zeolite in the presence of water vapor at a water vapor partial pressure of at least about 0.2 p.s.i.a.;
(c) ion-exchanging the calcined zeolite from step (b) with ammonium ions;
(d) introducing, after said ammonium ion exchange of step (c), a hydrogenation metal component consisting essentially of one or more Group VIB or Group VIII metal-containing cations into said zeolite by cation exchange; and subsequently
(e) mixing the zeolite from step (d) with a porous, refractory oxide component and calcining the resultant mixture.

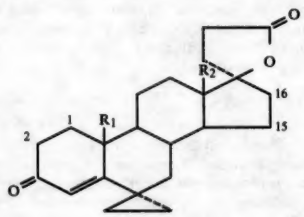
4,584,288

6,6-ETHYLENE-15,16-METHYLENE-3-OXO-17α-PREGN-4-ENE-21,17-CARBOLACTONES, PROCESSES FOR THE PRODUCTION THEREOF, AND PHARMACEUTICAL PREPARATIONS CONTAINING THEM

Klaus Nickish; Dieter Bittler; Henry Laurent; Rudolf Wiechert; Sybille Beier, and Walter Elger, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

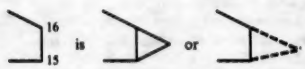
Filed Jan. 18, 1985, Ser. No. 692,489
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1984, 3402329
Int. Cl.[4] C07J *19/00*; A61K *31/58*
U.S. Cl. 514—172 **18 Claims**

1. A 6,6-Ethylene-15,16-methylene-3-oxo-17α-pregn-4-ene-21,17-carbolactone of the formula



wherein

is a CC-single or CC-double bond,
R_1 is hydrogen or methyl,
R_2 is methyl or ethyl, and



12. A pharmaceutical composition comprising an amount of a compound of claim 1 and a pharmacologically acceptable carrier.

4,584,289

14-AMINOSTEROID DERIVATIVES, APPLICATION IN THERAPY AND PROCESS OF PREPARATION

Francois-Xavier Jarreau, Versailles, and Jean-Jacques Koenig, Vernou la Celle s/Seine, both of France, assignors to Etablissements Nativelle S.A., France

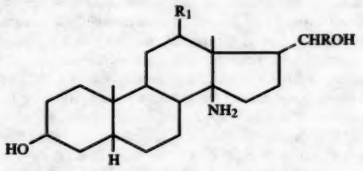
Filed Aug. 12, 1983, Ser. No. 522,957

Claims priority, application France, Aug. 12, 1982, 82 14038; Jun. 17, 1983, 83 10031

Int. Cl.[4] C07J 5/00

U.S. Cl. 514—182 9 Claims

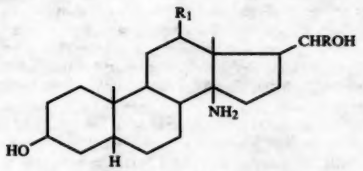
1. A method for the treatment of cardiac insufficiencies which comprises administering to an afflicted subject a therapeutically effective amount of 14-amino steroid represented by the general formula (I):



(I)

in which R represents a hydrogen atom or a lower alkyl group containing 1 to 4 carbon atoms and R_1 represents a hydrogen atom or a hydroxyl group, or a pharmaceutically acceptable salt thereof.

8. A pharmaceutical composition for the treatment of cardiac insufficiencies which contains a therapeutically effective amount of a 14-aminosteroid represented by the general formula (I):



(I)

in which R represents a hydrogen atom or a lower alkyl group containing 1 to 4 carbon atoms and R_1 represents a hydrogen atom or a hydroxyl group, R and R_1 not being a hydrogen atom simultaneously, it being understood that when R_1 is a hydrogen atom, the —OH group in the 20-position has the β configuration when the —OH group in the 3-position has the β configuration and when the hydrogen atom in the 17-position possesses the α configuration or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

4,584,290

CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Takashi Masugi, Ikeda; Takashi Ogino, Kobe; Hisashi Takasugi, Hamagutinishi, and Hideaki Yamanaka, Hirakata, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

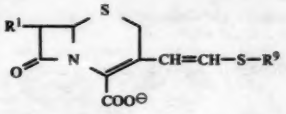
Filed Nov. 30, 1983, Ser. No. 556,413

Claims priority, application United Kingdom, Dec. 6, 1982, 8234755; Jan. 5, 1983, 8300122; Jun. 28, 1983, 8317496; Nov. 8, 1983, 8329768

Int. Cl.[4] C07D 501/38; A61K 31/545

U.S. Cl. 514—206 6 Claims

1. A cephem compound of the formula:



wherein R^1 is alkanoylamino;

amino thiazolyl(lower)alkanoylamino having a lower alkoxyimino;

aminothiazolyl(lower)alkanoylamino having a lower alkenyloxyimino;

aminothiazolyl(lower)alkanoylamino having a lower alkynyloxyimino;

aminothiazolyl(lower)alkanoylamino having a carboxy(lower)alkoxyimino;

aminothiazolyl(lower)alkanoylamino having a lower alkoxycarbonyl(lower)alkoxyimino;

thiazolyl(lower)alkanoylamino having a amino- ar(lower)alkoxycarbonyl(lower)alkoxyimino;

aminothiazolyl(lower)alkanoylamino having a hydroxy(lower)alkoxyimino;

aminothiazolyl(lower)alkanoylamino having a carboxy(lower)alkenyloxyimino;

aminothiazolyl(lower)alkanoylamino having an ar(lower)alkoxycarbonyl(lower)alkenyloxyimino;

aminothiazolyl(lower)alkanoylamino having a pyridyl(lower)alkoxyimino;

aminothiazolyl(lower)alkanoylamino having a 1-(lower)alkyl pyridinio(lower)alkoxyimino;

lower alkanoylaminothiazolyl(lower)alkanoylamino having a lower alkoxyimino;

ar(lower)alkylaminothiazolyl(lower)alkanoylamino having a lower alkoxyimino;

ar(lower)alkylaminothiazolyl(lower)alkanoylamino having a lower alkynyloxyimino;

lower alkanoylaminothiazolyl(lower)alkanoylamino having a lower alkoxycarbonyl(lower)alkoxyimino;

ar(lower)alkylaminothiazolyl(lower)alkanoylamino having an ar(lower)alkoxycarbonyl(lower)alkoxyimino;

ar(lower)alkylaminothiazolyl(lower)alkanoylamino having an ar(lower)alkoxycarbonyl(lower)-alkenyloxyimino;

lower alkanoylaminothiazolyl(lower)alkanoylamino having a pyridyl(lower)alkoxyimino;

aminothiadiazolyl(lower)alkanoylamino having a lower alkoxyimino;

aminothiadiazolyl(lower)alkanoylamino having a lower alkenyloxyimino;

aminothiadiazolyl(lower)alkanoylamino having a lower alkynyloxyimino;

aminothiadiazolyl(lower)alkanoylamino having a hydroxy(lower)alkoxyimino;

aminothiadiazolyl(lower)alkanoylamino having a carboxy(lower)alkoxyimino;

phosphonoaminothiadiazolyl(lower)alkanoylamino having a lower alkoxyimino;

thiazolyl(lower)alkanoylamino having a carboxy(lower)alkoxyimino;

thiadiazolyl(lower)alkanoylamino having a lower alkoxyimino;

isothiazolylthio(lower)alkanoylamino substituted with hydrogen and carboxy;

aminothiazolyl hydroxy substituted(lower)alkanoyl amino;

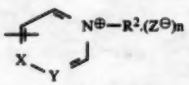
dihydrooxathiinyl(lower)alkanoylamino having a lower alkoxyimino;

hydroxy ar(lower)alkanoylamino having a lower alkoxyimino;

aminopyrimidinyl(lower)alkanoylamino having a lower alkenyloxyimino;

aminopyridyl(lower)alkanoylamino having a lower alkoxyimino;

lower alkanoylaminopyridyl(lower)alkanoylamino having a lower alkoxyimino;
aminothiazolyl(lower)alkanoylamino having a carboxycyclo(lower)alkoxyimino; or
ar(lower)alkylaminothiazolyl(lower)alkanoylamino having a lower alkoxycarbonylcyclo(lower)alkoxyimino;
and
R^9 is a group of the formula:



wherein R^2 is lower alkyl, amino(lower)alkyl, hydroxy(lower-)alkyl, carboxy(lower)alkyl, di(lower)alkylamino(lower)alkyl, morpholino(lower)alkyl, lower alkylpiperazinyl(lower)alkyl, lower alkylpiperazinylcarbonyl(lower)alkyl or formimidoylamino(lower)alkyl,
X is CH or N,
Z is alkanoyloxy, azido or halogen,
Y is CH or N and n is 0; or
Y is $N^{\oplus}—R^2$ wherein R^2 is as defined above and n is 1, or a group of the formula:

$$—A—N^{\oplus}(R^{10})3$$

wherein R^{10} is lower alkyl and
A is lower alkylene, and pharmaceutically acceptable salts thereof.

4,584,291

9-DEOXY-9-TETRAZOLYL-DERIVATIVES OF CLAVULANIC ACID, THEIR PREPARATION AND THEIR USE

John B. Harbridge, Coulsdon, England, assignor to Beecham Group p.l.c., England

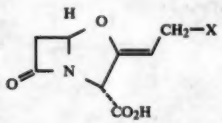
Continuation of Ser. No. 325,979, Nov. 30, 1981, abandoned. This application Mar. 16, 1984, Ser. No. 590,415

Claims priority, application United Kingdom, Dec. 9, 1980, 8039447; Jun. 12, 1981, 8118110

Int. Cl.[4] C07D *498/04*; A61K *31/42, 31/445*

U.S. Cl. 514—210 **19 Claims**

1. A compound of the formula (II) or a pharmaceutically acceptable salt or non-toxic in-vivo hydrolyzable ester thereof:



(II)

wherein X is tetrazolyl attached via a nitrogen atom, said tetrazolyl moiety being unsubstituted or substituted by a carboxyl salt, an in-vivo hydrolyzable carboxyl ester of the formula (b), (c), (d) or (e):

$$—CO—O—CHR^3—O—CO—R^4 \quad (b)$$

$$—CO—O—R^5—NR^6R^7 \quad (c)$$

$$CO—OA^1 \quad (d) \text{ or}$$

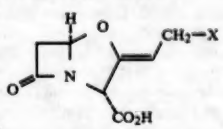
$$CO—O—CHA^2A^3 \quad (e)$$

wherein R^3 is hydrogen, methyl or phenyl; R^4 is alkyl of 1 to 6 carbon atoms, phenyl, phenylalkyl of 1 to 3 carbon atoms in the alkyl moiety, alkoxy of 1 to 6 carbon atoms, phenoxy or phenylalkoxy of 1 to 3 carbon atoms in the alkyl moiety; or R^3 and R^4 are together with the —O—CO— moiety to which they are attached form a phthalidyl or 3,4-dimethoxyphthalidyl moiety; R^5 is methylene or ethylene; R^6 and R^7 are each methyl or ethyl; A^1 is alkyl of 1 to 6 carbon atoms unsubstituted or substituted by an alkoxy of 1 to 7 carbon atoms; A^2 is alkenyl of 2 to 5 carbon atoms unsubstituted or substituted by a phenyl moiety; phenyl unsubstituted or substituted by a fluoro, chloro, bromo, nitro, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; and A^3 is hydrogen, alkyl of 1 to 4 carbon atoms or phenyl unsubstituted or substituted by a fluoro, chloro, bromo, nitro, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; or by a group of the sub-formula (a):

$$—(CO)_n—NR^1R^2 \quad (a)$$

wherein n is zero or one; R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, alkanoyl of 1 to 6 carbon atoms or arylcarbonyl unsubstituted or substituted by one or more hydroxy, halo, carboxy, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, aralkoxy of 1 to 10 carbon atoms in the alkoxy moiety, arylcarbonyl, alkylthio of 1 to 6 carbon atoms in the alkyl moiety, arylthio, amino, alkylamino of 1 to 6 carbon atoms in the alkyl moiety or di-alkylamino of 1 to 6 carbon atoms in each alkyl moiety; and R^2 is hydrogen, alkyl of 1 to 6 carbon atoms, or alkanoyl of 1 to 6 carbon atoms, or R^1 and R^2 are methyl substituted by a carboxy, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms or arylcarbonyl and the other is as above defined; or when R^1 or R^2 is other than methyl, said R^1 or R^2 moiety is substituted by a hydroxy, halo, carboxy, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, arylalkoxy of 1 to 6 carbon atoms in the alkoxy moiety, arylcarbonyl, alkylthio of 1 to 6 carbon atoms, arylthio, amino, alkylamino of 1 to 6 carbon atoms or di-alkylamino of 1 to 6 carbon atoms; or R^1 and R^2 are joined to form with the nitrogen atom to which they are attached, a 4-, 5- or 6-membered ring wherein the nitrogen atom is the only heteroatom, and wherein aryl as used herein is phenyl, pyrrolyl, furyl, thienyl, indolyl, benzofuryl, or thianaphthyl.

10. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially effective amount or a betalactamase inhibitory amount of a compound of the formula (II):



(II)

or a pharmaceutically acceptable salt or pharmaceutically acceptable in-vivo hydrolyzable ester thereof, wherein X is a tetrazolyl attached via a nitrogen atom, said tetrazolyl moiety being unsubstituted or substituted by a carboxyl salt, an in-vivo hydrolyzable carboxyl ester of the formula (b), (c), (d) or (e):

$$—CO—O—CHR^3—O—CO—R^4 \quad (b)$$

$$—CO—O—R^5—NR^6R^7 \quad (c)$$

$$CO—OA^1 \quad (d) \text{ or}$$

$$CO—O—CHA^2A^3 \quad (e)$$

wherein R^3 is hydrogen, methyl or phenyl; R^4 is alkyl of 1 to 6 carbon atoms, phenyl, phenylalkyl of 1 to 3 carbon atoms in the alkyl moiety, alkoxy of 1 to 6 carbon atoms, phenoxy or phenylalkoxy of 1 to 3 carbon atoms in the alkyl moiety; or R^3 and R^4 are together with the CH—O—CO— moiety to which

they are attached form a phthalidyl or 3,4-dimethoxyphthalidyl moiety; R^5 is methylene or ethylene; R^6 and R^7 are each methyl or ethyl; A^1 is alkyl of 1 to 6 carbon atoms unsubstituted or substituted by an alkoxy of 1 to 7 carbon atoms; A^2 is alkenyl of 2 to 5 carbon atoms unsubstituted or substituted by a phenyl moiety; phenyl unsubstituted or substituted by a fluoro, chloro, bromo, nitro, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; and A^3 is hydrogen, alkyl of 1 to 4 carbon atoms or phenyl unsubstituted or substituted by a fluoro, chloro, bromo, nitro, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; or by a group of the sub-formula (a):

$$-(CO)_n-NR^1R^2 \qquad (a)$$

wherein n is zero or one; R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, alkanoyl of 1 to 6 carbon atoms or arylcarbonyl unsubstituted or substituted by one or more hydroxy, halo, carboxy, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, aralkoxy of 1 to 10 carbon atoms in the alkoxy moiety, arylcarbonyl, alkylthio of 1 to 6 carbon atoms in the alkyl moiety, arylthio, amino, alkylamino of 1 to 6 carbon atoms in the alkyl moiety or di-alkylamino of 1 to 6 carbon atoms in each alkyl moiety; and R^2 is hydrogen, alkyl of 1 to 6 carbon atoms, or alkanoyl of 1 to 6 carbon atoms, or R^1 and R^2 are methyl substituted by a carboxy, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms or arylcarbonyl and the other is as above defined; or when R^1 or R^2 is other than methyl, said R^1 or R^2 moiety is substituted by a hydroxy, halo, carboxy, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, arylalkoxy of 1 to 6 carbon atoms in the alkoxy moiety, arylcarbonyl, alkylthio of 1 to 6 carbon atoms, arylthio, amino, alkylamino of 1 to 6 carbon atoms or di-alkylamino of 1 to 6 carbon atoms; or R^1 and R^2 are joined to form with the nitrogen atom to which they are attached, a 4-, 5- or 6-membered ring wherein the nitrogen atom is the only heteroatom, and wherein aryl as used herein is phenyl, pyrrolyl, furyl, thienyl, indolyl, benzofuryl, or thianaphthyl, in combination with a pharmaceutically acceptable carrier.

4,584,292

ANTIHYPERTENSIVE 1,5-BENZOTHIAZEPINE DERIVATIVES AND COMPOSITIONS THEREOF

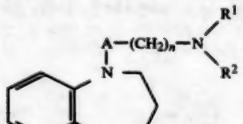
Tsuyoshi Tomiyama, Sakaki, Japan, assignor to Kotobuki Seiyaku Co., Ltd., Sakaki, Japan

Filed Oct. 19, 1984, Ser. No. 662,840

Int. Cl.[4] A61K *31/55, 31/44;* **C07D** *285/36, 417/06*

U.S. Cl. 514—211 **17 Claims**

1. A compound of the formula:



wherein:

A is $>C=O$ or $>CH_2$;

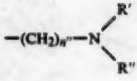
n is an integer from 1 to 3;

R^1 is H, a lower alkyl or lower alkanoyl group; and

R^2 is a phenyl group, a pyridyl or lower alkyl substituted pyridyl group, the group

$$-R-OH$$

wherein R is a lower alkyl group, the group



wherein R′ and R″ each represent a lower alkyl group and n″ is 1 or 2, or the group

$$-CH_2CH_2-Ph,$$

wherein Ph is a phenyl group or phenyl group substituted with lower alkoxy or chloro groups

n′ is 1 or 2; or a pharmaceutically acceptable acid addition salt thereof.

17. A therapeutic composition to inhibit hypertension comprising a pharmaceutically acceptable carrier and as an active ingredient a compound defined in claim 1 in an amount effective to inhibit hypertension.

4,584,293

AMINOTETRALIN DERIVATIVES

Manfred Reiffen, Biberach; Joachim Heider, Warthausen; Volkhard Austel; Norbert Hauel, both of Biberach, all of Fed. Rep. of Germany; Walter Kobinger, and Christian Lillie, both of Vienna, Austria, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

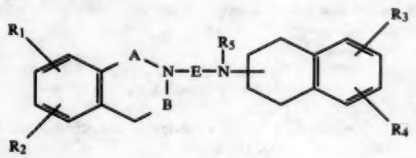
Filed May 8, 1985, Ser. No. 732,199

Claims priority, application Fed. Rep. of Germany, May 17, 1984, 3418270

Int. Cl.[4] A61K *31/55;* **C07D** *223/16, 491/55, 521/00*

U.S. Cl. 514—213 **38 Claims**

1. A compound having the formula



wherein

A is $-CH_2-CH_2-$, $-CH=CH-$, $-\underset{5}{NH}-CO-$, or

$-\underset{5}{CH_2}-CO-$, $-CO-CO-$ or $-\underset{5}{CHOH}-CO-$;

B is methylene or, when A is $-CH_2-CH_2-$, $-CH=CH-$, $-NH-CO-$ or $-CH_2-CO-$, B can also be carbonyl or thiocarbonyl;

E is a C_2–C_4 straight-chain alkylene, optionally substituted by a C_1–C_3 alkyl, or is 2-hydroxy-n-propylene, 2-hydroxy-n-butylene or 3-hydroxy-n-butylene;

R_1 is hydrogen, fluorine, chlorine, bromine trifluoromethyl, nitro, amino, C_1–C_3 alkylamino, C_1–C_3 dialkylamino, C_1–C_3 alkyl, C_1–C_3 alkylthio, hydroxy, C_1–C_3 alkoxy or phenyl C_1–C_3 alkoxy;

R_2 is hydrogen, chlorine, bromine, hydroxy, C_1–C_3 alkoxy, phenyl C_1–C_3 alkoxy or C_1–C_3 alkyl or, together with R_1, can be a C_1–C_2 alkylenedioxy;

R_3 and R_4 are each independently selected from hydrogen, fluorine, chlorine, bromine, C_1–C_3 alkyl, hydroxy, C_1–C_3

alkoxy, nitro, amino, C_1–C_2 alkylamino or C_1–C_3 dialkylamino or together can be methylenedioxy;

R_5 is hydrogen, C_3–C_5 alkenyl, C_1–C_3 alkyl or phenyl C_1–C_3 alkyl and nontoxic, pharmaceutically acceptable addition salts thereof.

4,584,294

FUSED TRICYCLIC LACTAMS AS ANGIOTENSIN CONVERTING ENZYME INHIBITORS AND AS ANTIHYPERTENSIVE AGENTS

William V. Ruyle, Scotch Plains, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

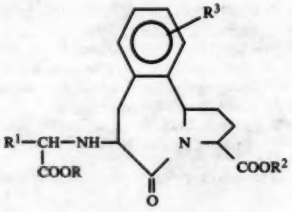
Filed Nov. 7, 1984, Ser. No. 669,179

Int. Cl.[4] A61K *31/55;* **C07D** *223/32*

U.S. Cl. 514—214 **8 Claims**

1. A compound having the formula:

(I)



wherein:

R and R^2 are independently

(a) hydrogen;

(b) C_1–C_6-alkyl;

(c) substituted C_1–C_6 alkyl wherein the substituents are hydroxy, C_1–C_4 alkyloxy and di-(C_1–C_4)-alkylamino;

(d) C_6 or C_{10} aryl;

(e) substituted C_6 or C_{10} aryl wherein the substituents are C_1–C_6 alkyl, halo (F, Cl, Br, I), and C_1–C_4 alkyloxy;

R^1 is

(a) hydrogen;

(b) C_1–C_8 straight or branched alkyl;

(c) C_2–C_8 straight or branched alkenyl;

(d) C_2–C_8 straight or branched alkynyl;

(e) C_3–C_{10} cycloalkyl;

(f) C_6 or C_{10} aryl (C_1–C_4) alkyl;

(g) substituted C_1–C_8 alkyl containing 1-3 substituents selected from halo (F, Br, Cl, I), carboxamido, C_1–C_4 alkoxy carbonyl, mercapto, amino, and R wherein R is as defined above;

(h) C_1–C_8 alkyl optionally containing an O, S, S=O, O=S=O, C=O, $CONR_2$, SO_2NR_2, NRCO, $NRCONR_2$, $OCONR_2$, NRCOO or $—NR_2$ group wherein R is as defined above;

R^3 is

(a) hydrogen;

(b) halo (F, Br, Cl, I);

(c) C_1–C_6 alkyl;

(d) C_1–C_6 alkyloxy; and,

the pharmaceutically acceptable salts thereof.

6. A method of treating hypertension which comprises administering to a patient in need of such treatment an antihypertensively effective amount of a compound of claim 1.

4,584,295

PYRIMIDYLMETHYL THIOPHOSPHORUS ESTERS USEFUL FOR THE CONTROL OF INSECTS, MITES AND NEMATODES

Christoph Lüthy, Schwerzenbach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 27, 1983, Ser. No. 566,104

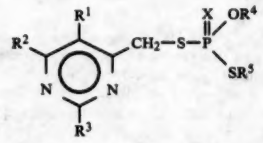
Claims priority, application Switzerland, Jan. 7, 1983, 89/83; Nov. 18, 1983, 6214/83

Int. Cl.[4] A01N *57/16;* **C07F** *9/65*

U.S. Cl. 514—86 **34 Claims**

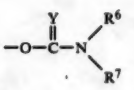
1. A compound of the formula

I

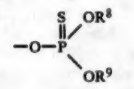


wherein R^1 is hydrogen, fluorine or chlorine, R^2 is hydrogen, fluorine, chlorine, C_{1-4}-alkyl, C_{1-6}-alkoxy, 2-propenyloxy, 2-propynyloxy, 2-(C_{1-4}-alkoxy)-ethoxy, unsubstituted phenoxy, phenoxy monosubstituted or disubstituted with halogen, C_{1-6}-alkylthio, C_{1-4}-alkylamino, di(C_{1-4}-alkyl)amino or a group (a) or (b)

(a)



(b)



R^3 is hydrogen, fluorine, chlorine, C_{1-6}-alkyl, C_{3-6}-cycloalkyl, (C_{1-4}-alkoxy)methyl, (C_{1-4}-alkylthio) methyl, C_{1-6}-alkoxy, 2-propenyloxy, 2-propynyloxy, C_{1-6}alkylthio, C_{1-4}-alkylamino, di(C_{1-4}-alkyl)amino or unsubstituted, monosubstituted or disubstituted phenyl, the substituents being fluorine, chlorine, trifluoromethyl and/or methoxy, R^4 is C_{1-3}-alkyl, R^5 is n-propyl or sec.butyl, R^6, R^7, R^8 and R^9 each independently are C_{1-3}-alkyl and X and Y each independently are oxygen or sulfur.

23. A pesticidal composition for control of insects, mites and nematodes which comprises inert carrier material and, as the active ingredient, an amount, which is effective as a pesticide, of a compound of claim **1**.

29. A method for the control of insects, mites and nematodes which comprises applying, to the site to be treated or the pests themselves, an amount of the pesticidal composition of claim **23** which is effective in the control of pests.

4,584,296

PESTICIDAL COMPOSITIONS

Jozef Drabek, Oberwil; John Legge, Witterswil, and Markus Bachmann, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

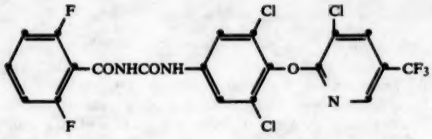
Filed May 21, 1984, Ser. No. 612,236

Claims priority, application Switzerland, May 30, 1983, 2942/83; May 3, 1983, 297/83; May 3, 1983, 2944/83

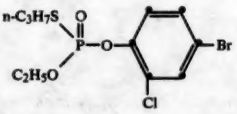
Int. Cl.[4] A01N *57/10, 43/40*

U.S. Cl. 514—147 **3 Claims**

1. An insecticidal and acaricidal composition which contains, as active ingredient, a combination of the compound of the formula



with a compound of the formula



in a ratio of 3:25.

4,584,297

PYRROLO[1,2-C]-1,3-THIAZINES

Jean-Louis Fabre, Paris; Daniel Farge, Thiais; Claude James, and Daniel Lave, both of Paris, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

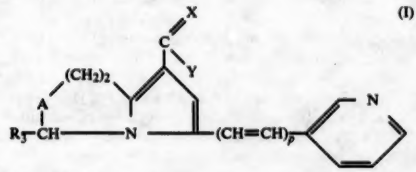
Division of Ser. No. 569,907, Jan. 11, 1984, Pat. No. 4,546,100. This application Apr. 10, 1985, Ser. No. 721,773

Claims priority, application France, Jan. 13, 1983, 83 00454

Int. Cl.[4] C07D *417/14;* A61K *31/54*

U.S. Cl. 514—226 **6 Claims**

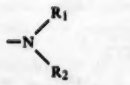
1. A heterocyclic compound of the formula:



(I)

in which A represents —S—, —SO— or SO_2—, R_3 represents hydrogen, alkyl or phenyl unsubstituted or substituted by halogen, alkyl, alkoxy or trifluoromethyl, and

(a) X represents oxygen, sulphur, imino or hydroxyimino, p represents 0 or 1 and Y represents a radical of the formula:



(II)

in which R_1 and R_2 both represent hydrogen, or R_1 represents hydrogen and R_2 represents hydroxyl or alkyl of 1 to 5 carbon atoms, which is substituted by a carboxyl, amino, alkylamino, dialkylamino, hydroxyalkylamino, morpholino or imidazolyl, or piperazin-1-yl radical (unsubstituted or substituted in the 4-position by alkyl, benzyl optionally substituted by halogen, alkyl, alkoxy or trifluoromethyl, or phenyl optionally substituted by halogen, alkyl, alkoxy or trifluoromethyl) or a piperidino or pyrrolidin-1-yl radical, or R_2 represents phenyl substituted by one or more hydroxyl, carboxyl, amino, alkylamino or dialkylamino radicals, or R_1 and R_2 form, with the nitrogen atom to which they are bonded, a 5-membered or 6-membered ring which can also contain another heteroatom selected from oxygen, sulphur and nitrogen and which is unsubstituted or substituted by alkyl, alkoxycarbonyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl or dialkylaminoalkyl, a benzyl radical (optionally substituted by a halogen atom or an alkyl, alkoxy or trifluoromethyl radical) or a pyrrolidin-1-yl carbonylalkyl radical, or

(b) X represents dialkylhydrazono, Y represents amino and p represents 0 or 1, or

(c) X and Y form with the carbon atom to which they are bonded, a Δ2-thiazolin-2-yl or Δ2-imidazolin-2-yl radical and p represents 0 or 1, or

(d) X represents oxygen, Y represents hydrogen and p is 0, the said alkyl radicals and alkyl portions being straight-chain or branched-chain and, unless stated otherwise, containing 1 to 4 carbon atoms each, and the tautomeric forms of the compounds where X represents imino, hydroxyimino or dialkylhydrazono and Y represents a radical of the formula (II) in which R_1 represents a hydrogen atom, or where X represents oxygen or sulphur and Y represents a radical of the general formula (II) in which R_1 represents hydrogen and R_2 represents hydroxyl; and its addition salts with acids and, where they exist, its metal salts and its addition salts with nitrogen-containing bases.

4,584,298

TRIAZINONES

David Brown, Macclesfield; Rodney B. Hargreaves, Poynton; Bernard J. McLoughlin, and Stuart D. Mills, both of Macclesfield, all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

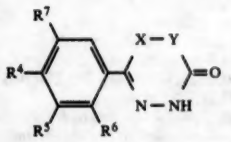
Division of Ser. No. 436,801, Oct. 26, 1982, Pat. No. 4,495,185. This application Oct. 12, 1984, Ser. No. 660,135

Claims priority, application United Kingdom, Nov. 12, 1981, 8134175

Int. Cl.[4] C07D *253/06;* A61K *31/53*

U.S. Cl. 514—242 **5 Claims**

1. A heterocyclic compound of the formula



wherein X is —NH— and Y is $—CR^1R^2—$, wherein R^1 and R^2, which may be the same or different, each is hydrogen or alkyl of up to 4 carbon atoms;

wherein either R^4 is hydrogen, fluoro or chloro, or alkyl, alkenyl, halogenoalkyl, aminoalkyl, hydroxyalkyl, alkoxyalkyl or alkoxy each of up to 6 carbon atom, and R^5, R^6 and R^7, which may be the same of different, each is hydrogen, fluoro, chloro, bromo or iodo, or alkyl, alkenyl, halogenalkyl, aminoalkyl, hydroxyalkyl, alkoxyalkyl or alkoxy each of up to 6 carbon atoms, provided that R^4, R^5, R^6 and R^7 are not all hydrogen;

or R^4 is bromo and R^5, R^6 and R^7 have the meanings stated above, provided that R^5, R^6 and R^7 are not all hydrogen;

or R^4 and R^5 together, or R^5 and R^6 together, or R^4 and R^7 together, form the —CH=CH—CH=CH— group and the other two of R^4, R^5 and R^7 have the meanings stated above.

4,584,299

METHOD OF TREATING HEART FAILURE AND MEDICAMENTS THEREFOR

Robert P. Steffen; Dale B. Evans, both of Saline; Harvey R. Kaplan, and Jerry A. Weisbach, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

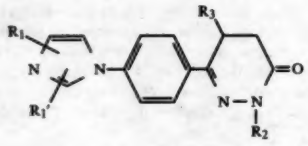
Filed May 21, 1984, Ser. No. 612,275

Int. Cl.[4] A61K *31/50, 31/495*

U.S. Cl. 514—252 **7 Claims**

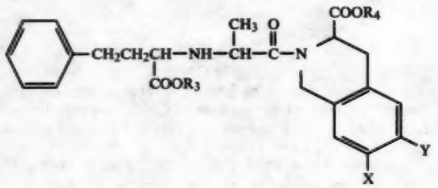
1. A pharmaceutical composition for increasing myocardial contractility and cardiac output comprising

(a) 1–200 mg of a compound of the formula



wherein R_1 and $R_1{}^1$ are independently hydrogen or alkyl of one to three carbon atoms; R_2 is hydrogen, alkyl of one to three carbon atoms or 2-hydroxyethyl, and R_3 is hydrogen or alkyl of one to three carbon atoms, or a pharmaceutically acceptable acid addition salt thereof,

(b) 1–100 mg of a compound of the formula



wherein R_3 is as defined above; R_4 is hydrogen or alkyl of one to three carbon atoms; X and Y are hydrogen or methoxy, or pharmaceutically acceptable basic salt thereof, in admixture with a pharmaceutically acceptable carrier.

4,584,300

PLATELET ANTI-AGGREGATIVE- AND CALCIUM ANTAGONISTIC -1,4-BENZOTHIAZIN-3-ONE DERIVATIVES, COMPOSITIONS, AND METHODS OF USE THEREFOR

Jun-ichi Iwao, Takarazuka; Tadashi Iso, Sakai, and Masayuki Oya, Ibaraki, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

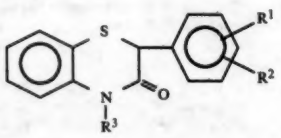
Filed Jan. 17, 1984, Ser. No. 571,467

Claims priority, application Japan, Feb. 7, 1983, 58-19467; Feb. 9, 1983, 58-20990

Int. Cl.[4] A61K *31/54;* **C07D** *279/16, 417/12*

U.S. Cl. 514—225 **32 Claims**

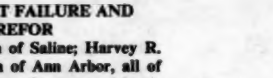
1. A compound of the formula or a salt thereof,



[I]

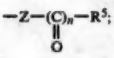
wherein

R^1 is

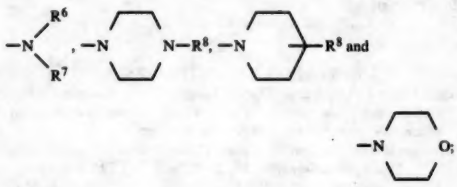


R^2 is selected from the group consisting of hydrogen, (C_1–C_6)alkyl, halogen, nitro, hydroxy, amino, (C_1–C_6)alkoxy, (C_1–C_6)alkanoyloxy, (C_1–C_6)alkylamino and (C_1–C_6)alkoxycarbonyloxy;

R^3 is hydrogen, (C_1–C_6)alkyl or



R^4 and R^5 are same or different and are selected from the group consisting of hydroxy, halogen, methoxy



R^6 and R^7 are same or different and are selected from the group consisting of hydrogen, (C_1–C_6)alkyl, (C_4–C_7)cycloalkyl and phenyl-(C_1–C_6)alkyl, and said phenyl nucleus can be substituted by hydroxy, (C_1–C_6)alkyl or (C_1–C_6)alkoxy;

R^8 is selected from the group consisting of hydrogen, (C_1–C_6)alkyl, (C_1–C_6)alkanoyl, (C_1–C_6)alkoxycarbonyl, carboxy, phenyl, phenylcarbonyl, phenyl-(C_1–C_6)alkyl, phenyl-(C_1–C_6)alkanoyl, and phenylcarbonyl-(C_1–C_6)alkyl, and said alkyl and alkanoyl groups can be substituted by hydroxy, (C_1–C_6)alkoxy, carboxy, (C_1–C_6)alkoxycarbonyl, halogen, amino, (C_1–C_6)alkylamino or tetrahydropyranyloxy, and said phenyl nucleus can be substituted by (C_1–C_6)alkyl, hydroxy, (C_1–C_6)alkoxy, (C_1–C_6)alkanoyl, (C_1–C_6)alkoxycarbonyl, halogen, amino or (C_1–C_6)alkylamino;

A, B and Z are same or different and are (C_1–C_6)alkylene; and

m and n each is 0 or 1.

28. A pharmaceutical composition having a platelet anti-aggregation effect comprising (i) a pharmaceutical carrier and (ii) a platelet anti-aggregative effective amount of a compound of claim 1.

29. A method of preventing the aggregation of platelets comprising administering the composition of claim 28 in a platelet anti-aggregative effective amount.

32. A method of lowering excessive calcium blood levels comprising administering a compound of claim 1 in an amount sufficient to lower excessive calcium blood levels.

4,584,301

DIPHENYLMETHYLENE PIPERIDINES, COMPOSITIONS AND METHODS OF USE

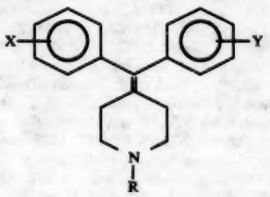
David A. Downs, and Haile Tecle, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 500,344, Jun. 2, 1983, Pat. No. 4,540,780. This application May 16, 1985, Ser. No. 734,432

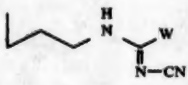
Int. Cl.[4] A61K *31/445;* **C07D** *211/70, 295/14, 211/74*

U.S. Cl. 514—316 **8 Claims**

1. Diphenylmethylene piperidine compounds having in free base form the structural formula I:



where R has the structural formula If:



and where X and Y, which can be the same or different, are H, halogen, halomethyl, alkyl or alkoxy; W is SCH_3, $NHCH_3$ or 1-piperidinyl; and pharmaceutically acceptable salts thereof.

4. A pharmaceutical composition comprising a compound according to claim 1, in combination with a pharmaceutically acceptable carrier.

4,584,302

METHODS FOR THE TREATMENT OF VENTRICULAR DYSRHYTHMIA AND PREVENTION OF VENTRICULAR FIBRILLATION

William E. Hageman, Telford, and Michael J. Zelesko, North Wales, both of Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Filed Sep. 26, 1983, Ser. No. 535,476
Int. Cl.[4] A61K *31/445, 31/40*
U.S. Cl. 514—324 **13 Claims**

1. A method of preventing ventricular fibrillation in a mammal, which comprises administering to the mammal, an effective amount of a thioheterocyclic selected from the group consisting of:

3-[2-(1-methyl-2-pyrrolidinylideneamino)ethylthio]indole;

3-[2-(1-phenyl-2-pyrrolidinylideneamino)ethylthio]indole;

5-methoxy-3-[2-(1-methyl-2-pyrrolidinylideneamino)ethylthio]indole;

3-[2-(1-methyl-2-pyrrolidinylideneamino)ethylthio]-7-methylindole;

5-chloro-3-[2-(1-methyl-2-pyrrolidinylideneamino)ethylthio]-2-methylindole;

2-[(3-benzo[b]thienyl)thio]-N-(1-methyl-2-piperidinylidene)ethanamine; or

2-[(3-benzo[b]thienyl)thio]-N-(1-methyl-2-pyrrolidinylidene)ethanamine;

and the pharmaceutically-acceptable acid-addition salts thereof.

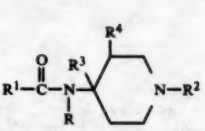
4,584,303

N-ARYL-N-(4-PIPERIDINYL)AMIDES AND PHARMACEUTICAL COMPOSITIONS AND METHOD EMPLOYING SUCH COMPOUNDS

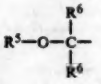
Bao-Shan Huang, Edison; Ross C. Terrell, Clark; Kirsten H. Deutsche, Morristown; Linas V. Kudzma, North Bergen, all of N.J., and Nhora L. Lalinde, West Nyack, N.Y., assignors to The BOC Group, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 598,769, Apr. 9, 1984, abandoned. This application Apr. 17, 1985, Ser. No. 707,433
Int. Cl.[4] A61K *31/445;* **C07D** *405/12, 417/12, 401/12*
U.S. Cl. 514—326 **132 Claims**

1. A compound of the formula



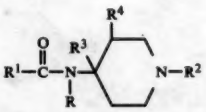
optically active isomeric forms thereof, and/or pharmaceutically acceptable acid addition salts thereof, in which formula: R is selected from the group consisting of phenyl and substituted phenyl wherein the substituents are selected from halogen, cyano, lower-alkoxy, lower-alkyl, lower-alkylenedioxy, halogenated lower-alkyl, lower-alkylthio, or combinations thereof; R^1 is a group of the formula



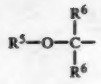
wherein R^5 is selected from lower-alkyl, lower-cycloalkyl, halogenated lower-alkyl, phenyl, or phenyl lower-alkyl, and wherein each R^6 is independently selected from hydrogen, lower-cycloalkyl or lower-alkyl; R^2 is selcted from the group consisting of phenyl-lower-alkyl, lower-alkyl, lower-alkenyl, lower-alkynyl, halogenated lower-alkyl, (lower-cycloakyl)-lower-alkyl, (cyclopentyl)-lower-alkyl, thienyl lower-alkyl, thiazolyl lower-alkyl which can be substitued in the 4-position with a methyl group, (4,5-dihydro-5-oxo-1H-tetrazol-1-yl) lower-alkyl which can be substitued in the 4-position with a group selected from lower-alkyl, lower-cycloalkyl, phenyl or phenyl lower-alkyl, and substitued phenyl lower-alkyl in which the substituents on the phenyl ring are selected from halogen, cyano, lower-alkoxy, lower-alkyl, lower-alkylenedioxy, halogenated lower-alkyl, lower-alkylthio or combinations thereof; R^3 is selected from a group consisting of hydrogen, methoxymethyl, and a carboxylate radical represented by the formula

wherein R^{10} is selected from the group consisting of lower-alkyl, phenyl-lower-alkyl, lower-alkoxy-lower-alkyl, and phenyloxy-lower-alkyl; and R^4 is selected from hydrogen or methyl.

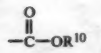
89. A method for providing analgesia in a mammal comprising adminstering to such a mammal an analgesically effective amount of a compound of the formula



optically active isomeric forms thereof, and/or pharmaceutically acceptable acid addition salts thereof, in which formula: R is selected from the group consisting of phenyl and substituted phenyl wherein the substituents are selected from halogen, cyano, lower-alkoxy, lower-alkyl, lower-alkylenedioxy, halogenated lower-alkyl, lower-alkylthio, or combinations thereof; R^1 is a group of the formula



wherein R^5 is selected from lower-alkyl, lower-cycloalkyl, halogenated lower-alkyl, phenyl, or phenyl lower-alkyl, and wherein each R^6 is independently selected from hydrogen, lower-cycloalkyl or lower-alkyl; R^2 is selected from the group consisting of phenyl-lower-alkyl, lower-alkyl, lower-alkenyl, lower-alkynyl, halogenated lower-alkyl, (lower-cycloalkyl)-lower-alkyl, (cyclopentyl)-lower-alkyl, thienyl lower-alkyl, thiazolyl lower-alkyl which can be substitued in the 4-position with a methyl group, (4,5-dihydro-5-oxo-1H-tetrazol-1-yl) lower-alkyl which can be substitued in the 4-position with a group selected from lower-alkyl, lower-cycloalkyl, phenyl or phenyl-lower-alkyl, and substitued phenyl lower-alkyl in which the substituents on the phenyl ring are selected from halogen, cyano, lower-alkoxy, lower-alkyl, lower-alkylenedioxy, halogenated lower-alkyl, lower-alkylthio or combinations thereof; R^3 is selected from a group consisting of hydrogen, methoxymethyl, and a carboxylate radical represented by the formula



wherein R^{10} is selected from the group consisting of lower-alkyl, phenyl-lower-alkyl, lower-alkoxy-lower-alkyl, and phenyloxyl-lower-alkyl; and R^4 is selected from hydrogen or methyl.

4,584,304

2-PYRIDINYLMETHYL OXYIMINOCYCLOPROPANECARBOXYLATES AS PESTICIDES

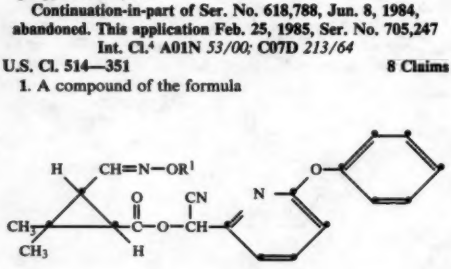
Thomas L. Brown, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 618,788, Jun. 8, 1984, abandoned. This application Feb. 25, 1985, Ser. No. 705,247

Int. Cl.[4] A01N *53/00;* **C07D** *213/64*

U.S. Cl. 514—351 **8 Claims**

1. A compound of the formula



wherein R^1 is an alkyl group consisting of 4 to 5 carbon atoms.

7. An insecticidal or acaricidal composition comprising an insecticidally or miticidally effective amount of a compound according to claim 1 and at least one surface-active agent or carrier therefore.

4,584,305

AIDING THE REGRESSION OF NEOPLASTIC DISEASE WITH 2,3,5,6-TETRAHYDRO-6-PHENYLIMIDAZO[2,1] THIAZOLE

Josephus Brugmans, Schilde-Antwerp, Belgium; William Pollack, Belle Mead, N.J.; Paul A. J. Janssen, Vosselaar, Belgium, and Daniel Tripodi, Westford, Mass., assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation of Ser. No. 67,505, Aug. 17, 1979, abandoned, which is a continuation of Ser. No. 944,520, Sep. 30, 1978, abandoned, which is a continuation of Ser. No. 799,893, May 23, 1977, abandoned, which is a continuation of Ser. No. 591,795, Jun. 30, 1975, abandoned, which is a continuation-in-part of Ser. No. 424,030, Dec. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 281,367, Aug. 17, 1972, abandoned. This application Feb. 2, 1981, Ser. No. 230,578

Int. Cl.[4] A61K *31/425*

U.S. Cl. 514—368 **17 Claims**

1. A process of aiding regression and palliation of neoplastic disease which comprises the systemic administration to human and animal subjects hosting the neoplastic disease of an effective anti-neoplastic amount of a member selected from the group consisting of 2,3,5,6-tetrahydo-6-phenylimidazo[2,1-b]thiazole and the therapeutically active acid addition salts thereof in a pharmaceutical carrier.

4,584,306

NEMATICIDAL 2-(SUBSTITUTED THIO)-4,5-DIHYDROTHIAZOLES

Anthony J. Martinez, Hamilton Square, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Apr. 4, 1984, Ser. No. 596,759

Int. Cl.[4] C07D *277/10;* **A61K** *31/425*

U.S. Cl. 514—369 **3 Claims**

1. A method for control of nematodes in agricultural crops which comprises applying to the soil in which such crops are or are to be planted a nematicidal amount of a compound of the formula

in which

n is 1; R is a tetrahydrofuranyl or thienyl group which may be substituted with a halogen atom, or a furanyl group.

4,584,307

ANTIFUNGAL 2-ARYL-2-HYDROXY PERFLUORO-1-(1H-1,2,4-TRIAZOL-1-YL) ALKANONES AND ALKANOLS

Kenneth Richardson, and Peter J. Whittle, both of Canterbury, Great Britain, assignors to Pfizer Inc., New York, N.Y.

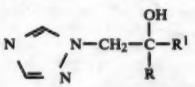
Filed Jul. 16, 1984, Ser. No. 631,120

Claims priority, application United Kingdom, Aug. 10, 1983, 8321527; Feb. 8, 1984, 8403279

Int. Cl.[4] A01N *43/653;* **C07D** *249/08, 401/06*

U.S. Cl. 514—383 **13 Claims**

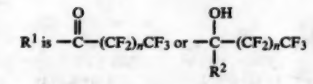
1. A compound of the formula:



(I)

or a pharmaceutically or agriculturally acceptable salt thereof, wherein R is 5-chloropyrid-2-yl or a phenyl group optionally

substituted by 1 to 2 substituents each independently selected from F or Cl;
and



where n is 1 or 2, and R^2 is H or C_1–C_4 alkyl.

11. A fungicidal composition comprising a compound according to claim **1** or a pharmaceutically or agriculturally acceptable salt thereof, together with a pharmaceutically or agriculturally acceptable diluent or carrier.

4,584,308

SUBSTITUTED HYDROXYALKYL-AZOLE FUNGICIDAL AGENTS, THEIR PREPARATION AND THEIR USE

Hans-Ludwig Elbe, Wuppertal; Karl H. Büchel, Burscheid; Wilhelm Brandes, Leichlingen; Paul Reinecke, Leverkusen, and Hans-Jürgen Rosslenbroich, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

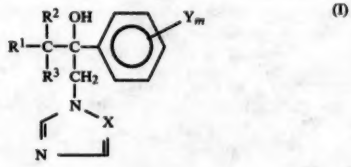
Filed Nov. 23, 1983, Ser. No. 554,749

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245504

Int. Cl.⁴ A01N *43/50, 43/64, 55/02, 55/04*

U.S. Cl. 514—383 **10 Claims**

1. A method of combating plant-pathogenic fungi which comprises applying to such fungi, to a plant, part of a plant or to a field in which plants are grown or to be grown a fungicidally effective amount of a substituted hydroxyalkyl-azole of the formula



(I)

in which

R^1 is phenyl, —O-phenyl —S-Phenyl, —SO-phenyl, SO_2-phenyl, —CH_2-phenyl, —CH_2—O-phenyl, —CH_2—S-phenyl, —CH_2—SO-phenyl or —CH_2—SO_2-phenyl, in each case optionally mono- or di-substituted by halogen or alkyl with 1 or 2 carbon atoms;

R^2 is alkyl with 1 to 4 carbon atoms,

R^3 is alkyl with 1 to 4 carbon atoms,

X is a nitrogen atom or the CH group,

Y is halogen, alkyl with 1 to 4 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, alkoxy or alkylthio with in each case 1 to 4 carbon atoms, halogenoalkyl, halogenoalkoxy or halogenoalkylthio with in each case 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms or phenyl, phenoxy, phenylalkyl or phenylalkoxy with 1 or 2 carbon atoms in the alkyl part or in the alkoxy part, each of which is optionally substituted by halogen or alkyl with 1 or 2 carbon atoms, and

m is 0, 1, 2 or 3,

or an addition product thereof with an acid or matel salt.

4,584,309

FUNGICIDAL COMPOSITIONS CONTAINING MIXTURES OF A SUBSTITUTED TRIAZOLE-1-PENTEN-3-OL COMPOUND WITH OTHER FUNGICIDES SUCH AS TETRACHLOROISOPHTHALONITRILE

Yukio Ishiguri; Hirotaka Takano, both of Takarazuka, and Yuji Funaki, Funabashi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 498,017, May 25, 1983, abandoned. This application May 28, 1985, Ser. No. 737,909

Claims priority, application Japan, May 27, 1982, 57-91000; May 27, 1982, 57-91001; May 28, 1982, 57-91930; May 31, 1982, 57-93787

Int. Cl.⁴ A01N *43/64*

U.S. Cl. 514—383 **3 Claims**

1. A fungicidal composition containing as an active ingredient, 0.1 to 99.9% by weight of a mixture of (E)-1-(2,4-dichlorophenyl)-4,4-dimethyl-2-(1,2,4-triazol-1-yl)-1-pentene-3-ol and tetrachloroisophthalonitrile in the mixing ratio of 1:1 to 1:10 by weight and an inert carrier.

4,584,310

NOVEL MERCAPTOIMIDAZOLE DERIVATIVES

Pier G. Ferrini, Binningen, Switzerland, and Richard Göschke, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 321,840, Nov. 16, 1981, Pat. No. 4,461,770, which is a continuation of Ser. No. 200,880, Oct. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 134,802, Mar. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 25,310, Mar. 30, 1979, abandoned. This application Mar. 9, 1984, Ser. No. 588,024

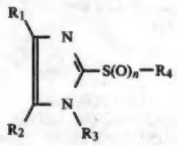
Claims priority, application Luxembourg, Apr. 11, 1978, 79412

Int. Cl.⁴ A61K *31/415;* **C07D** *233/84*

U.S. Cl. 514—397 **12 Claims**

1. A compound selected from the group consisting of

(i) a mercaptoimidazole of the formula:



in which

at least one of R_1 and R_2 is unsubstituted thienyl and the other when not thienyl is phenyl or phenyl substituted with alkyl of 1 to 4 carbon atoms, fluoro, chloro, bromo, nitro, or dialkylamino having 1 to 4 carbon atoms in each alkyl group;

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_4 is alkyl or alkenyl of up to 7 carbon atoms, unsubstituted or substituted with

(a) phenyl, unsubstituted or substituted with alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atom, chloro, fluoro, bromo, nitro, amino, or dialkyamino having up to 4 carbon atoms in each alkyl group or

(b) in a position non-adjacent to the depicted sulfur atom,

(1) alkoxy of 1 to 4 carbon atoms;

(2) alkylthio of 1 to 4 carbon atoms; or

(3) phenoxy or phenylthio, unsubstituted or substituted with alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atom, chloro, fluoro, bromo, nitro, amino, or dialkyamino having up to 4 carbon atoms in each alkyl group;

n is 0, 1 or 2; and

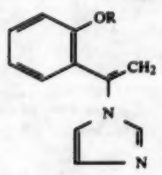
(ii) the pharmaceutically acceptable acid addition salts thereof.

4,584,311
MICROBIOCIDAL 1-[1-(ALKOXYPHENYL)VINYL]-1H-IMIDAZOLES

Nobuo Komoto; Mitaka; Kiyoshi Arai, and Setsuko Hirose, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jan. 7, 1985, Ser. No. 689,063
Claims priority, application Japan, Jan. 9, 1984, 59-823
Int. Cl.[4] A01N *43/50*; C07D *233/60*
U.S. Cl. 514—399 7 Claims

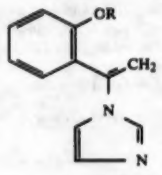
1. An imidazole derivative represented by the formula:



(I)

wherein R represents a linear or branched alkyl group having 6 to 9 carbon atoms, or an acid addition salt thereof.

4. An industrial microbicidal composition comprising (a), as an active ingredient, a microbicidally effective amount of an imidazole derivative represented by the formula:



(I)

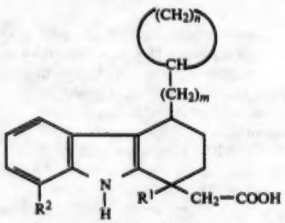
wherein R represents a linear or branched alkyl group having 6 to 9 carbon atoms, or an acid addition salt thereof, and (b) a carrier.

4,584,312
SUBSTITUTED 2,3,4,9-TETRAHYDRO-1H-CARBAZOLE-1-ACETIC ACID, COMPOSITIONS AND USE

Dominick Mobilio; Christopher A. Demerson, both of Plainsboro, and Leslie G. Humber, North Brunswick, all of N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed May 31, 1985, Ser. No. 740,123
Int. Cl.[4] A61K *31/40*; C07D *209/86, 209/82*
U.S. Cl. 514—411 7 Claims

1. A compound of the formula (I)



(I)

ps wherein R^1 is lower alkyl, R^2 is hydrogen or lower alkyl, m is 0 or 1, n is 2 to 5, and the pharmaceutically acceptable salt thereof.

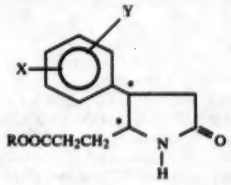
6. A pharmaceutical composition comprising a compound of structure (I), or a pharmaceutically acceptable salt thereof, as defined in claim 1 and a pharmaceutically acceptable carrier.

4,584,313
(SUBSTITUTED-PHENYL)-5-OXO-2-PYRROLIDINE-PROPANOIC ACIDS AND ESTERS THEREOF, AND USE FOR REVERSING ELECTROCONVULSIVE SHOCK-INDUCED AMNESIA

Donald E. Butler, and Anthony J. Thomas, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 7, 1984, Ser. No. 607,376
Int. Cl.[4] C07D *207/36*; A61K *31/40*
U.S. Cl. 514—424 19 Claims

1. A compound having structural formula I



I

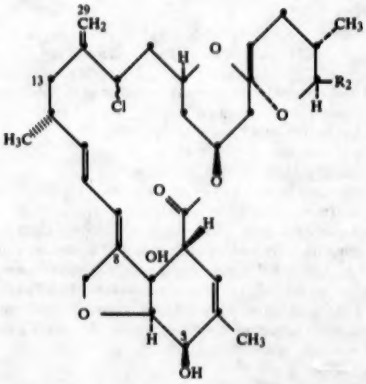
wherein R is hydrogen, or a pharmaceutically acceptable cation, alkyl of from one to six carbon atoms, or phenylmethyl, and X and Y are independently hydrogen, alkyl of from one to six carbon stoms, alkoxy of from one to six carbon atoms, chloro-, or trifluoromethyl.

4,584,314
LACTONE DERIVATIVE, PROCESS FOR THE PREPARATION THEREOF, AND USE THEREOF IN PEST CONTROL

Urs Burckhardt, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 16, 1984, Ser. No. 672,029
Claims priority, application Switzerland, Nov. 25, 1983, 6323/83; May 28, 1984, 2610/84
Int. Cl.[4] C07D *495/20, 495/22*; A01N *43/22*; A61K *31/365*
U.S. Cl. 514—450 5 Claims

1. A milbemycin derivative of the formula I



(I)

wherein R_2 is methyl, ethyl, isopropyl or sec-butyl.

4,584,315

METHOD OF TREATING ISCHEMIC STATES

Norman B. Marshall, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 321,367, Nov. 16, 1981, abandoned. This application Dec. 13, 1983, Ser. No. 561,013
Int. Cl.[4] A61K *31/35, 31/215*
U.S. Cl. 514—456 2 Claims

1. In a method of preventing or treating a pathological cardiovascular ischemic state (PACVIS) in an animal exhibiting or susceptible to development of said PACVIS with one or more known vasodilating agents selected from the group consisting of coronary vasodilating agents including nitroglycerin and isosorbide dinitrate, and direct vasodilating agents including hydralazine, diazoxide, minoxidil, and sodium nitroprusside, the improvement which comprises:

concomitantly administering an amount of an anti-PACVIS biologue equal to the amount of the instant anti-PACVIS biologue were it the sole therapy, down to an amount not less than 50 percent thereof, which, together with said known vasodilator agent, is effective to prevent or arrest said PACVIS.

4,584,316

PALLADIUM ANTI-CANCER COMPLEXES

Barnett Rosenberg, Holt, Mich., and Devinder S. Gill, Monroeville, Pa., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 478,843, Mar. 25, 1983, abandoned. This application Jul. 16, 1984, Ser. No. 631,024
Int. Cl.[4] A01N *55/02;* A61K *31/28;* C07F *15/00*
U.S. Cl. 514—492 48 Claims

1. A palladium complex having the formula cis:

$$Pd(II)A_mX_n$$

wherein:

m is 1 or 2,

n is 1 or 2, and

when m is 1, A is selected from the group consisting of bipyridine and alkylene diamines other than ethylene diamine having the formula

$$R_1RN—(Alk)—NRR_1$$

wherein R and R_1 may be the same or different and are H, C_2 to C_6 alkyl, C_2 to C_6 hydroxy alkyl, C_2 to C_6 alkoxy, C_6 to C_{10} aryl, C_3 to C_{12} cycloalkyl and C_3 to C_{12} cycloalkenyl and

Alk is selected from the group consisting of unsubstituted C_2 to C_{12} alkylene; C_2 to C_{12} alkylene substituted with C_2 to C_6 hydroxy alkyl or C_2 to C_6 alkoxy; C_6 to C_{10} aryl and C_3 to C_{12} cycloalkane,

when m is 2, A is selected from the group consisting of C_2 to C_6 alkyl amine; C_2 to C_6 alkyl amine substituted in the alkyl group or nitrogen atom thereof by C_2 to C_6 hydroxy alkyl, hydroxy or C_2 to C_6 alkoxy; aniline; benzylamine and amino acids having the formula

$$R^3CHNH_2COOH$$

wherein R^3 is H, C_2 to C_6 alkyl, C_2 to C_6 hydroxy alkyl and benzyl, and

when n is 2, X is a monovalent anionic ligand selected from the group consisting of bromide, iodide, nitrite, hydroxide, nitrate, lactate, C_2 to C_6 alkoxy, fluoride, acetate, trifluoracetate, chloroacetate, cyanide, cyanate, ozonide, azide, chlorite, hypochlorite and hypophosphite, and

when n is 1, X is a divalent anionic ligand selected from the group consisting of pyrophosphite, dithiooxalate, phthalate, carboxyphthalate, gluconate, glucuronate, carbonate, sulphite, selenite, pyrosulphite and dithionite,

provided that the sum of the valencies of A_m and X_n is four.

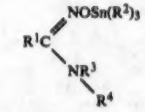
4,584,317

PESTICIDAL TIN AMIDOXIMES

William F. King, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 11, 1984, Ser. No. 649,459
Int. Cl.[4] A01N *55/04;* C07F *7/28;* A61K *31/32*
U.S. Cl. 514—493 28 Claims

1. A compound of the formula:



wherein R^1 is lower alkyl of 1 to 6 carbon atoms; alkylthioalkylene of 2 to 5 carbon atoms; aryl of 6 to 10 carbon atoms; aralkyl of 7 to 12 carbon atoms; arylthioalkyl of 7 to 11 carbon atoms; or substituted aryl, substituted aralkyl or substituted arylthioalkyl each substituted with 1 to 3 substitutents independently selected from halo, nitro, lower alkoxy of 1 to 4 carbon atoms, or lower alkyl of 1 to 4 carbon atoms; R^2 is lower alkyl of 1 to 6 carbon atoms, lower cycloalkyl of 3 to 8 carbon atoms, phenyl or benzyl; and R^3 and R^4 are independently hydrogen, lower alkyl of 1 to 6 carbon atoms or phenyl.

17. A method of controlling fungi which comprises contacting said fungi or their growth environment with a fungicidally effective amount of a compound of claim 1.

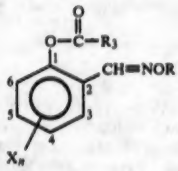
4,584,318

NEMATICIDAL SALICYLALDEHYDE DERIVATIVES

Clinton J. Peake, Trenton; Carmine P. DiSanzo, Lawrenceville, both of N.J., and John F. Engel, Washington Crossing, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 273,899, Jun. 15, 1981, abandoned. This application Jun. 20, 1983, Ser. No. 505,606
Int. Cl.[4] C07C *69/00;* A01N *37/02, 37/06*
U.S. Cl. 514—546 13 Claims

1. A method for the control of soil nematodes by applying to the situs of infestation a nematicidally effective amount of a composition comprising as active ingredient in admixture with a solid extender a compound of the formula:



wherein

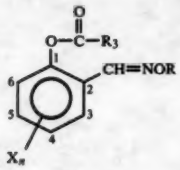
R is C_2–C_4 alkyl, 2-propynyl,cyclopropylmethyl;

R_3 is C_1–C_6 alkyl, straight or branched, optionally substituted with chlorine or nitro;

X is fluorine, chlorine in the 4-position;

n is 1.

10. A compound of the formula:



wherein

R is 2-propynyl;

R_3 is C_1–C_6 alkyl, straight or branched, substituted with at least one chlorine or nitro group;

X is fluorine, chlorine in the 4-position;

n is 1.

4,584,319

POLYOXYETHYLENE DERIVATIVES AS ANTIPRURITIC ECTOPARASITICIDE

Myron J. Lover, Mountainside; Arnold J. Singer, South Orange; Donald M. Lynch, Waldwick, and William E. Rhodes, III, Cranford, all of N.J., assignors to Block Drug Co., Inc., Jersey City, N.J.

Division of Ser. No. 429,444, Sep. 30, 1982, Pat. No. 4,497,831, which is a division of Ser. No. 004,229, Jan. 17, 1979, Pat. No. 4,372,977, which is a continuation of Ser. No. 802,012, May 31, 1977, abandoned. This application Jan. 16, 1985, Ser. No. 691,833

Int. Cl.[4] A01N *37/02, 37/06*

U.S. Cl. 514—547 **6 Claims**

1. A method of controlling ectoparasites or their ova which comprises applying to a human or animal host in need of such control, an effective toxic amount of at least one derivative of polyoxyethylene having an HLB of about 2.5–13.5, said derivative being an alkyl ester containing 12 to 24 carbon atoms thereof.

4,584,320

ANTI-ASTHMATIC COMPOSITION AND METHOD USING 8,11,14,17-EICOSATETRAENOIC ACID

David Rubin, 5 Rav Zair, Jerusalem, Israel

Filed Jan. 3, 1985, Ser. No. 688,521

Int. Cl.[4] A61K *31/20*

U.S. Cl. 514—560 **13 Claims**

1. A composition for the treatment of conditions caused by excessive release of SRS-A, consisting essentially of an amount effective to inhibit relase of SRS-A of 8,11,14,17-eicosatetraenoic acid or a pharmaceutically acceptable salt or ester thereof and a pharmaceutically acceptable vehicle.

4,584,321

3-(3-HYDROXYBUTOXY)-1-BUTANOL IN PHARMACEUTICAL COMPOSITIONS

Elso Manghisi, and Aldo Salimbeni, both of Milan, Italy, assignors to Istituto Luso Farmaco d'Italia S.p.A., Milan, Italy

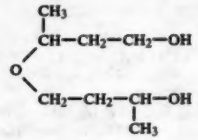
Filed Apr. 23, 1984, Ser. No. 603,134

Claims priority, application Italy, May 30, 1983, 21352 A/83

Int. Cl.[4] A61K *31/08*

U.S. Cl. 514—722 **2 Claims**

1. A pharmaceutical composition useful as an hepatoprotective agent, choleretic agent in the propylaxis and therapy of biliary calculosis and dyslipidemia which contains as the active ingredient 3-(3-hydroxybutoxy)-1-butanol formula II,



(II)

stereoisomers and optical isomers thereof and at least one pharmaceutically acceptable carrier, said compound of formula II being of such a degree of purity that its bis-p-nitrobenzoate derivative has a m.p. of 78°–79° C. and a spectrum ^{13}C-NMR ($CDCl_3$): δ19.6 (C-4), 23.4 (C-4'), 38.8 (C-2'), 39.2 (C-2), 59.3 (C-1), 66.0 (C-3') , 66.2 (C-1'), 73.9 (C-3), the amount of said active ingredient being such in at least one unit dose to administer 50–2000 mg daily to a patient in need of such treatment.

4,584,322

PROCESS FOR THE PRODUCTION OF ACETIC ACID FROM SYNTHESIS GAS

David W. Smith, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Apr. 9, 1984, Ser. No. 597,984

Int. Cl.[4] L07C *27/06*

U.S. Cl. 518—700 **13 Claims**

1. A process for preparing acetic acid and acetates which comprises reacting carbon monoxide with hydrogen in the liquid phase at a pressure of at least about 500 psig and a temperature of from about 150° C. to about 300° C. in the presence of a catalytically effective amount of a catalyst system comprising a ruthenium compound, a cobalt compound and an alkali metal halide activator.

4,584,323

FISCHER-TROPSCH HYDROCARBON SYNTHESIS WITH COPPER PROMOTED IRON/COBALT SPINEL CATALYST

Stuart L. Soled, Pittstown, and Rocco A. Fiato, Scotch Plains, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 561,192, Dec. 14, 1983, Pat. No. 4,544,671. This application May 20, 1985, Ser. No. 735,964

Int. Cl.[4] C07C *1/04*

U.S. Cl. 518—700 **23 Claims**

1. A process for synthesizing a hydrocarbon mixture containing C_2–C_{20} olefins comprising contacting a catalyst composition, comprising an unsupported, copper promoted iron-cobalt spinel, said spinel exhibiting a single phase being isostructural with Fe_3O_4 as determined by powder X-ray diffractometry, and possessing an initial BET surface area greater than 5 m^2/g and an Fe:Co atomic ratio of 4:1 and above, with a mixture of CO and hydrogen in a slurry liquid under conditions of pressure, space velocity, and elevated temperature, for a time sufficient to produce said C_2–C_{20} olefins.

4,584,324

SILICONE FOAM, WATER-BASED, AEROSOL COMPOSITION

Therese M. Bauman; Chi-Long Lee, and James A. Rabe, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 665,223, Oct. 26, 1984, Pat. No. 4,559,369. This application Sep. 30, 1985, Ser. No. 782,650

Int. Cl.[4] C08J *9/28, 9/30*

U.S. Cl. 521—88 **4 Claims**

1. A foam produced by releasing to the atmosphere a composition, under superatmospheric pressure, consisting of a mixture of

(A) 100 parts by weight of silicone emulsion which is an

aqueous, oil-in-water emulsion that cures upon drying at ambient temperature to an elastomeric film, the emulsion comprising crosslinked silicone polymer, surfactant, water, and optionally filler, curing agent, thickener, or mixtures thereof, the emulsion having a solids content of from 35 to 80 percent by weight,

(B) from 0 to 2 parts by weight of lauryl alcohol,

(C) from 0 to 10 parts by weight of fibers having a diameter of from 1 to 10 micrometers and a length of from 30 micrometers to 10 millimeters with a length to diameter ratio of greater than 10 to 1, and

(D) sufficient aerosol propellant selected from the group consisting of nitrogen, nitrous oxide, isobutane, propane dichlorodifluoromethane, trichlorofluoromethane, and mixtures thereof, to convert said composition to a froth when released to atmospheric pressure at 25° C., the froth producing an open-cell, elastomeric foam upon removal of water.

4,584,325

MODIFIED ALIPHATIC POLYURETHANE POLYMERS AND METHOD OF PREPARING AND USING SAME

Stuart B. Smith, Conyers, Ga., assignor to Thermocell Development, Ltd., Knoxville, Tenn.

Filed Apr. 26, 1985, Ser. No. 727,778

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—99 **29 Claims**

1. A process for preparing a light stable, fast reacting, polyester-modified aliphatic polyurethane polymeric reaction product, which process comprises admixing and reacting a composition, which composition comprises:

(a) 100 parts by weight of a trimerized or biuret polymethylene polyisocyanate prepolymer having free NCO groups;

(b) 10 to 150 parts by weight of an unsaturated polyester prepared by the reaction of an unsaturated polycarboxylic acid with a polyhydroxyl compound, and which polyester contains from about 0 to 40 percent by weight of a compatible unsaturated monomer adapted for a cross linking reaction with the unsaturated polyester;

(c) a metal salt promotor for the unsaturated polyester to promote the cross linking of the unsaturated polyester, the metal salt promotor present in an amount sufficient to promote a cross linking reaction;

(d) a peroxide initiator for the unsaturated polyester in an amount sufficient to initiate the cross linking reaction of the unsaturated polyester; and

(e) an aromatic or cycloaliphatic polyamine in a stoichiometric amount ranging from the amount to react with all or substantially all of the free NCO groups of the prepolymer and in a maximum amount to also react with the hydroxyl groups of the unsaturated polyester.

4,584,326

RADIOPAQUE POLYVINYL-SILICONE NETWORK RESIN COMPOSITIONS AND MEDICAL-SURGICAL TUBINGS PREPARED THEREFROM

Vincent J. Flynn, 130 New Rd., Apt. D-10, Parsippany, N.J. 07054

Filed Jun. 29, 1984, Ser. No. 626,149

The portion of the term of this patent subsequent to Apr. 1, 2003, has been disclaimed.

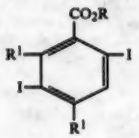
Int. Cl.[4] A01N *1/00*; A61F *2/00*

U.S. Cl. 523—112 **51 Claims**

1. A radiopaque composition comprising:

(a) a vinyl resin which is a polymer or copolymer of a halogenated vinyl monomer;

(b) a radiopacifier therefor consisting of a diiodobenzoate or a tetraiodobenzoate compound of the formula:



wherein

R^1 is hydrogen or iodo;

R is alkyl or alkoxyalkyl or a mixture of said compounds, said radiopacifier comprising 20 to 50 parts by weight per 100 parts by weight of (a) and (b); and, uniformly dispersed therein,

(c) a platinum-cured silicone network polymer, the amount of (c) comprising 2 to 30 parts by weight per 100 parts by weight of (a), (b) and (c), wherein said radiopaque composition is essentially free of filler.

4,584,327

ENVIRONMENTALLY COMPATABLE HIGH DENSITY DRILLING MUD, CEMENT COMPOSITION OR BLOW-OUT FLUID

David L. Sutton, Duncan, Okla., assignor to Halliburton Company, Duncan, Tex.

Filed May 24, 1985, Ser. No. 738,119

Int. Cl.[4] C08K *7/16*

U.S. Cl. 523—130 **20 Claims**

1. A high density fluid having cementitious properties comprising:

(a) water;

(b) a gelling agent selected from the group consisting of oxides of antimony, zinc oxide, barium oxide, barium sulfate, barium carbonate, iron oxide, hematite, other irons ores and mixtures thereof wherein said gelling agent has an average particle diameter size in the range of from about 0.5 to about 10.0 micrometers;

(c) hydraulic cement wherein said hydraulic cement has an average particle size in the range of from about 30 to about 200 micrometers wherein said hydraulic cement and said gelling agent have a physical makeup with regard to fine particle size, high density and intersurface attraction properties sufficient to create a slurry with said water that has a gel strength of at least 10 pounds per 100 square feet;

(d) a weighting material selected from the group consisting of iron powder, hematite, other iron ores, steel shot, tungsten, tin, manganese, iron shot, and mixtures thereof wherein said weighting material has an average particle diameter size of from about 2 to about 20 times the average particle size of the gelling agent; said fluid having a density of from 24 pounds per gallon to about 40 pounds per gallon.

4,584,328

METHOD OF ACCELERATING THE BREAKDOWN OF PHENOLIC RESIN BONDED CORES

Osamu Madono, 22-3 Ohto 5-chome, Yono-shi, Saitama-ken, Japan

Filed Oct. 12, 1983, Ser. No. 541,233

Claims priority, application Japan, Oct. 14, 1982, 57-179117

Int. Cl.[4] B22C *11/22*

U.S. Cl. 523—145 **6 Claims**

1. A method of accelerating the breakdown of phenolic resin bonded cores by means of adding a basic salt of alkali metals in powder form to phenolic resin coated sand, wherein the basic salt is selected from the group consisting of alkali metal carbonates, bicarbonates and organic acid salts, and mixtures thereof and wherein the basic salt powder is microencapsulated with a thermoplastic polymer.

4,584,329

HARDENABLE MOLDING MASSES AND THEIR USE

Arno Gardziella, Witten; Peter Adolphs, and Alois Kwasniok, both of Iserlohn, all of Fed. Rep. of Germany, assignors to Ruetgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 22, 1985, Ser. No. 714,747

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1984, 3411827

Int. Cl.[4] C08K *3/38*

U.S. Cl. 523—145 1 Claim

1. Hardenable molding masses comprising organic binders, at least one inert finely divided filler and 2 to 20% by weight based on the binder material of one or more boron containing compounds, said molding mass being capable of being shaped into a desired shape and hardened, said binder being a phenol aldehyde condensation product wherein the condensation is carried out in the presence of a boric acid compound and being capable of pyrolytic decomposition.

4,584,330

SYNTHETIC ALKALI METAL ALUMINUM SILICATES AS PIGMENT/COLORANT EXTENDERS AND PROPERTY ENHANCERS IN PLASTICS

Satish K. Wason, Churchville, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 576,831, Feb. 3, 1984, abandoned. This application Aug. 27, 1985, Ser. No. 769,770

Int. Cl.[4] C08K *3/34*

U.S. Cl. 523—513 8 Claims

1. A composition comprising an unsaturated polyester gel coat or pigmented polyester sheet molding compound having dispersed therein a synthetic alkali metal aluminum silicate having an average particle size of about 3.0 to 8.0 microns, said silicate being present in said gel coat or polyester sheet molding compound in an amount effective to enhance the tensile, reinforcing, opacity, brightness, pigment extending properties of said polyester gel coat or said polyester sheet molding compound.

4,584,331

POLYPHENYLENE ETHER RESIN COMPOSITION

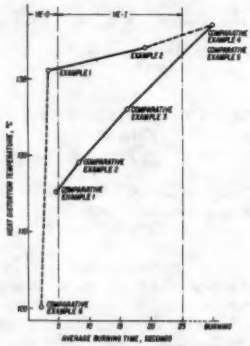
Yutaka Tamura, Ibaraki, and Ryohei Tanaka, Mie, both of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1983, Ser. No. 545,156

Claims priority, application Japan, Jan. 28, 1983, 58-12417

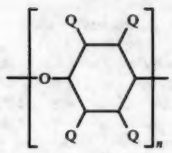
Int. Cl.[4] C08K *5/52*

U.S. Cl. 529—119 8 Claims



1. A polyphenylene ether resin composition comprising:

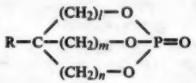
100 parts by weight of a polyphenylene ether resin of the formula:



(I)

wherein n is a positive integer of 50 or over and where Q is a monovalent substituent selected from the group consisting of hydrogen, a halogen atom, a hydrocarbon group having no tert-α-carbon atom, a halogenated hydrocarbon group having at least two carbon atoms between the halogen atom and the benzene nucleus of formula (I), a hydrocarbon oxy group and a halogenated hydrocarbon oxy group having at least two carbon atoms between the halogen atom and the benzene nucleus of formula (I) and at least the Q in the 2 or 6 position in formula (I) is not hydrogen, up to 400 parts by weight of an additional polymeric substance, which is a resin or an elastomer and, per 100 parts of the total weight of polyphenylene ether resin and of any such additional resin or elastomer present in the composition,

1 to 20 parts by weight of a bicyclophosphoric ester compound represented by the formula



(II)

wherein l is an integer of 0 to 2, m and n each is an integer of 1 to 3, and R is hydrogen, C_1–C_{19} alkyl, alkoxymethyl, or nitryl.

4,584,332

FLAME RETARDANT POLYPHENYLENE OXIDE THERMOP..ASTICS

John J. Talley, Clifton Park, and Carol B. Berman, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 17, 1984, Ser. No. 651,543

Int. Cl.[4] C08K *3/22, 5/49, 5/51*

U.S. Cl. 524—122 7 Claims

1. A flame retardant thermoplastic blend comprising by weight

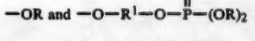
(A) 100 parts of polyphenylene oxide,

(B) 20 to 300 parts of styrene resin and

(C) 0.01 to 3 parts of zinc oxide per part of organothiophosphate having the formula

which is utilized in the flame retardant thermoplastic blend in an amount of sufficient to provide from 0.5% to 5% by weight of phosphorous based on the weight of flame retardant thermoplastic blend,

where R is a $C_{(1\text{-}13)}$ monovalent hydrocarbon radical or substituted $C_{(1\text{-}13)}$ monovalent hydrocarbon radical, Q is a monovalent group selected from the class consisting of



R^1 is selected from the class consisting of divalent $C_{(2-20)}$ hydrocarbon radicals, halogenated divalent $C_{(2-20)}$ hydrocarbon radicals and divalent radicals having the formula

$$-R^2(X)_aR^2-$$

where R^2 is a divalent $C_{(6-13)}$ arylene radical, X is a divalent radical selected from O, S, and C_yH_{2y}, y is a whole number from 1 to 5 inclusive and a is 0 or 1.

4,584,333

FIRE-RESISTANT THERMOPLASTIC COMPOSITION

Madeleine Prigent, Marcoussis; Jean P. Bonicel, Lyons, and Christian Cottevielle, Montreuil, all of France, assignors to Les Cables de Lyon, Clichy, France

Filed Jan. 15, 1985, Ser. No. 691,650
Claims priority, application France, Jan. 17, 1984, 84 00640
Int. Cl.[4] C08K *5/52*
U.S. Cl. 524—127 **9 Claims**

1. A fire-resistant thermoplastic composition, comprising at least one ethylene polymer and/or a copolymer of ethylene and another organic compound, an inorganic loading material capable of releasing oxhydryl ions, an alkoxysilane acting as a coupling agent between the polymer or copolymer and the inorganic loading material, and a plasticizer, characterized by the alkoxysilane being an aminoalkyl-alkoxysilane, and by the polymer or copolymer being nonreticulated.

4,584,334

POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING LINEAR LOW DENSITY POLYOLEFIN

Gim F. Lee, Jr., Albany, and Sai P. Ting, Delmar, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 362,305, Mar. 26, 1982, abandoned. This application Mar. 2, 1984, Ser. No. 585,766
Int. Cl.[4] C08K *5/51*
U.S. Cl. 524—151 **10 Claims**

1. A thermoplastic molding composition, comprising an admixture of

(a) a polyphenylene ether resin together with a rubber modified polystyrene; and

(b) an amount of linear low density polyethylene sufficient to provide a higher Gardner impact strength than the same amount of a low density polyethylene.

9. A composition according to claim **1**, which includes a flame retardant.

10. A composition according to claim **9**, in which the flame retardant is triphenyl phosphate.

4,584,335

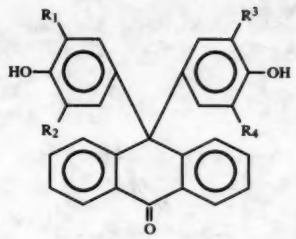
5-KETO-BIS(HYDROXYPHENYL)ANTHRACENE POLYARYLATE COPOLYMERS AND ALLOYS

Phillip H. Parker, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 28, 1984, Ser. No. 687,081
Int. Cl.[4] C08G *63/18*
U.S. Cl. 525—177 **50 Claims**

1. A polyarylate copolymer prepared by reacting

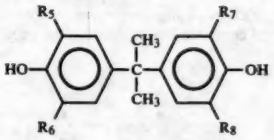
(A) a mixture of a 5-keto-bis(hydroxyphenyl)anthracene compound of the formula



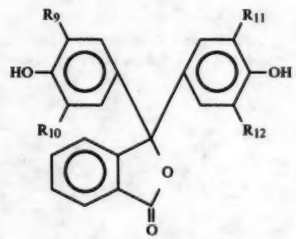
wherein R_1, R_2, R_3 and R_4 are independently hydrogen, lower alkyl of 1 to 4 carbon atoms or phenyl;

or a polyarylate-forming derivative thereof; and

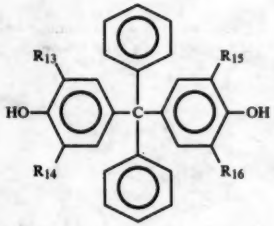
a bisphenol compound selected from the group consisting of



wherein R_5, R_6, R_7 and R_8 are independently hydrogen, lower alkyl of 1 to 4 carbon atoms or phenyl;



wherein R_9, R_{10}, R_{11} and R_{12} are independently hydrogen, lower alkyl of 1 to 4 carbon atoms or phenyl; and



wherein R_{13}, R_{14}, R_{15} and R_{16} are independently hydrogen, lower alkyl of 1 to 4 carbon atoms or phenyl;

or a polyarylate-forming derivative of said bisphenol compound; and

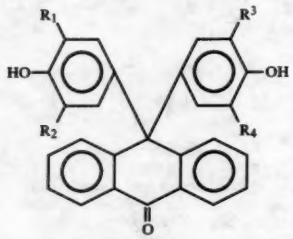
wherein the molar ratio of 5-keto-bis(hydroxyphenyl)anthracene to bisphenol is from 20:1 to 1:20; and

(B) a mixture of isophthalic and terephthalic acid or polyarylate-forming derivatives thereof, in a molar ratio of 9:1 to 1:9, respectively.

29. A polyarylate alloy composition comprising

(A) 10 to 90% by weight of a polyarylate copolymer prepared by reacting

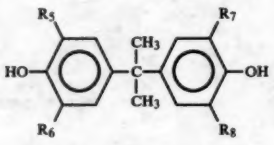
(1) a mixture of a 5-keto-bis(hydroxyphenyl)anthracene compound of the formula



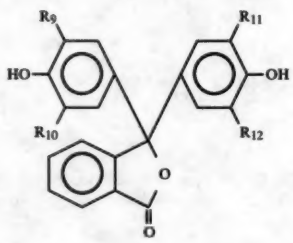
wherein R_1, R_2, R_3 R_4 are independently hydrogen, lower alkyl of 1 to 4 carbon atoms or phenyl;

or a polyarylate-forming derivative thereof; and

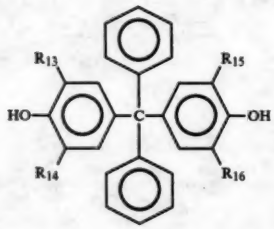
a bisphenol compound selected from the group consisting of



wherein R_5, R_6, R_7 and R_8 are independently hydrogen, lower alkyl or 1 to 4 carbon atoms or phenyl;



wherein R_9, R_{10}, R_{11} and R_{12} are independently hydrogen, lower alkyl or 1 to 4 carbon atoms or phenyl; and



wherein R_{13}, R_{14}, R_{15} and R_{16} are independently hydrogen, lower alkyl of 1 to 4 carbon atoms or phenyl;

or a polyarylate-forming derivative of said bisphenol compound; and

wherein the molar ratio of 5-keto-bis(hydroxyphenyl)anthracene to bisphenol is from 20:1 to 1:20; and

(2) a mixture of isophthalic and terephthalic acid or polyarylate-forming derivatives thereof, in a molar ratio of 9:1 to 1:9, respectively; and

(B) 10 to 90% by weight of a polymer resin selected from the group consisting of polybisphenol A carbonate and polystyrene.

4,584,336

THERMALLY CONDUCTIVE ROOM TEMPERATURE VULCANIZABLE COMPOSITIONS

Michelle Pate, and John C. Getson, both of Adrian, Mich., assignors to SWS Silicones Corporation, Adrian, Mich.

Filed Oct. 29, 1984, Ser. No. 665,468

Int. Cl.[4] C08K *3/28*

U.S. Cl. 524—443 **4 Claims**

1. A room temperature vulcanizable composition having thermally conductive properties which is stable in the absence of moisture, but when exposed to moisture cures to an elastomer, said composition comprising a hydroxyl-terminated organopolysiloxane, a crosslinking agent having an average of at least two hydrolyzable groups per molecule, in which the hydrolyzable groups are selected from the group consisting of acyloxy, amino, oximo, aminoxy, acylamino and phosphato groups, and from 30 to 95 percent by weight of a filler, based on the weight of the composition of which from 30 to 100 percent by weight based on the weight of the filler is silicon nitride particles.

4,584,337

AQUEOUS EMULSIONS CONTAINING HYDROPHILIC SILICONE-ORGANIC COPOLYMERS

Chi-long Lee, Midland, Mich., and Wen-Bin Shyu, Chagrin Falls, Ohio, assignors to Dow Corning Corporation, Midland, Mich.

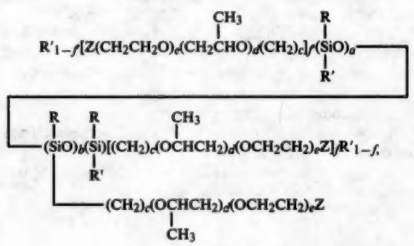
Filed Dec. 18, 1984, Ser. No. 683,303

Int. Cl.[4] C08L *51/08*

U.S. Cl. 524—500 **12 Claims**

1. An aqueous emulsion containing a hydrophilic, water-absorbing, silicone-organic copolymer elastomer consisting essentially of the product obtained upon reacting

(A) from 50 to 95 parts by weight of at least one block copolymer of the formula



wherein

a is an integer of from 4 to 49, inclusive,

b is an integer of from 0 to 15, inclusive,

c is an integer having a value of from 2 to 4, inclusive,

d is an integer of from 0 to 25, inclusive,

e is an integer of from 5 to 50 inclusive

d+e is no greater than 50 and e is greater than or equal to d,

f is 0 or 1,

f' is 0 or 1,

f+f'+b is at least 2,

R is a monovalent hydrocarbon or halohydrocarbon radical of from 1 to 6 inclusive carbon atoms which is free of aliphatic unsaturation,

R' is a methyl or a phenyl radical,

Z is a monovalent radical selected from the group consisting of $CH_2{=}CR''COOR'''NHCOO{-}$, $CH_2{=}CHCH_2NHCOO{-}$ and $CH_2{=}CR''COO{-}$,

R'' is an alkyl radical of from 1 to 4 inclusive carbon atoms or hydrogen, and

R''' is a divalent hydrocarbon radical of from 1 to 6 inclusive carbon atoms with

(B) from 5 to 50 parts by weight of at least one substantially water insoluble aliphatically unsaturated organic monomer which is compatible with said (A), said reaction being conducted under free radical polymerization conditions in the presence of water and an effective amount of a surfactant and wherein the dry elastomer obtained upon removal of the water is hydrophilic and capable of absorbing at least 3% by weight of water based upon the total weight of said elastomer.

4,584,338
HIGH IMPACT STRENGTH POLYCARBONATE RESIN COMPOSITION

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 343,947, Jan. 29, 1982, abandoned. This application Mar. 22, 1983, Ser. No. 477,740

Int. Cl.[4] C08K *3/40;* **C08L** *51/06, 52/02, 69/00*

U.S. Cl. 524—504 **15 Claims**

1. A thermoplastic molding composition exhibiting excellent room temperature impact strength in the form of high ½" notched Izod impact strength, high ¼" notched Izod impact strength and high double gate impact strength and excellent ductility in comparison with polycarbonate alone consisting essentially of:

a. from 80 to 99 parts by weight of a high molecular weight aromatic polycarbonate resin, the aromatic groups of said resin being unsubstituted; and

b. from 1 to 20 parts by weight of a thermoplastic hydrogenated AB diblock copolymer wherein A is derived from an alkenyl aromatic compound and B is derived from isoprene or butadiene per 100 parts of the polycarbonate plus the diblock copolymer.

7. A thermoplastic molding composition as defined in claim 1 which also includes (c) from 1 to 12% by weight of a multiphase composite interpolymer which comprises a C_{1-5} acrylate and a C_{1-5} methacrylate per 100 parts of the polycarbonate plus the diblock copolymer.

4,584,339
DILATANT BEHAVIOR OF INTERPOLYMER COMPLEXES IN AQUEOUS SOLUTION

Robert D. Lundberg, Bridgewater; Dennis G. Peiffer, East Brunswick, and Ilan Duvdevani, Leonia, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 29, 1984, Ser. No. 625,972

The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.

Int. Cl.[4] C08L *33/00, 33/06, 41/00*

U.S. Cl. 524—516 **6 Claims**

1. A method for increasing the viscosity of water and maintaining said viscosity of said water, when said water is subject to increasing shear rate which comprises the step of adding a polymer complex to said water in sufficient quantity to increase the viscosity of said water, said polymer complex comprising:

(a) a copolymer of a first water soluble polymer backbone and an anionic comonomer, said anionic comonomer is selected from the group consisting of styrene sulfonate, vinyl sulfonate, allyl sulfonate, acrylate and acrylamidopropyl sulfonate/2-acrylamido-2-methylpropane sulfonic acid, sodium styrene sulfonate, (meth)acrylic acid, 2-sulfoethylmethacrylate; and

(b) a copolymer of a second water soluble polymer backbone and a cationic comonomer, said cationic comonomer is selected from the group consisting of N,N,N-trimethylammoniumpropylmethacrylamide, vinyl pyridine/methacrylamidopropyltrimethylammonium chloride, dimethyldiallylammonium chloride, diethyldiallylammonium chloride, 2-methacryloxy-2-ethyltrimethylammonium chloride, trimethylmethacryloxyethylammonium methsulfate, 2-acrylamido-2-methylpropyltrimethylammonium chloride, vinylbenzyltrimethylammonium chloride, wherein the molar ratio of the cationic comonomer in the second copolymer to the anionic comonomer in the first copolymer is about 45/1 to about 1.1/1 or 1/1.1 to 1/45.

4,584,340
PHENOLIC RESIN-CONTAINING AQUEOUS COMPOSITIONS

Frank K. Chi, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 5, 1984, Ser. No. 668,046

Int. Cl.[4] C08K *3/36*

U.S. Cl. 524—596 **20 Claims**

1. An aqueous composition comprising

(A) 100 parts by weight phenolic resin;

(B) 1 to 100 parts by weight of colloidal silica;

(C) 1 to 100 parts by weight of a partial condensate, or a mixture of partial condensates, from silanes having the general formula $RSi(OR')_3$ wherein R' is methyl or ethyl and R is independently selected from a group consisting of

(i) alkyl radicals having 1 to 3 inclusive carbon atoms;

(ii) the $CH_2{=}CH{-}$ radical;

(iii) the $C_6H_5{-}$ radical;

(iv) substituted alkyl radicals having the formulae

$$-CH_2CH_2CH_2NH_2 \quad \text{(a)}$$

$$-CH_2CH_2CH_2NHCH_2CH_2NH_2 \quad \text{(b)}$$

$$-CH_2CH_2CH_2SH \quad \text{(c)}$$

$$-CH_2CH_2CH_2Cl \quad \text{(d)}$$

$$-CH_2CH_2CH_2OC(=O)C(CH_3)=CH_2 \quad \text{(e)}$$

$$-CH_2CH_2CH_2OCH_2\text{(epoxide)} \quad \text{(f)}$$

and

$$-CH_2CH_2CF_3 \text{ and,} \quad \text{(g)}$$

(D) 450 to 1900 parts by weight of water.

4,584,341
EMULSIONS OF CROSSLINKED POLYDIORGANOSILOXANES

David J. Huebner, and John C. Saam, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 25, 1984, Ser. No. 624,547

Int. Cl.[4] C08L *83/00, 83/06;* **C08K** *3/34;* **C08F** *2/32*

U.S. Cl. 524—837 **8 Claims**

1. A method of producing an aqueous latex of crosslinked polydiorganosiloxane consisting essentially of

(A) homogenizing a mixture consisting essentially of

(1) 100 parts by weight of polydiorganosiloxane of the formula:

$$HO(R_2SiO)_xH$$

wherein each R is a radical selected from the group consisting of methyl, ethyl, propyl, phenyl, vinyl, allyl, and 3,3,3-trifluoropropyl, and x is an average value in the range of from 3 to 100 inclusive

(2) from 15 to 75 millimoles of surface active anionic catalyst per kilogram of polydiorganosiloxane where said catalyst

is selected from the group consisting of dodecylbenzene sulfonic acid and hydrogen lauryl sulfate, and

(3) water, to yield an oil-in water emulsion, then

(B) admixing from 0.5 to 15 parts by weight of an alkoxy silicon compound selected from the group consisting of silane of the formula $R_a'Si(OR^3)_{4-a}$ where R' is a monovalent hydrocarbon radical having up to 12 carbon atoms, R^3 is an alkyl radical having 1 to 6 inclusive carbon atoms, and a is 0 or 1; a partial hydrolyzate of the silane where the partial hydrolyzate is soluble in the polydiorganosiloxane (1); and mixtures of silane and partial hydrolyzate,

(C) maintaining the emulsion produced in (B) at a temperature of from 15 to 30° C. for at least 5 hours at a pH of less than 5 until a crosslinked polymer emulsion is formed, then

(D) admixing sufficient base to raise the pH of the product of (C) to greater than 7, then

(E) admixing greater than 1 part by weight of colloidal silica sol or colloidal silsesquioxane to yield a latex which produces an elastomer upon removal of the water at room temperature.

4,584,342

LIQUID SILICONE RUBBER COMPOSITION

Kiyohiro Kondow, Gunma, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Japan

Filed Feb. 26, 1985, Ser. No. 705,566

Claims priority, application Japan, Feb. 27, 1984, 59-35725

Int. Cl.⁴ C03L *83/04*

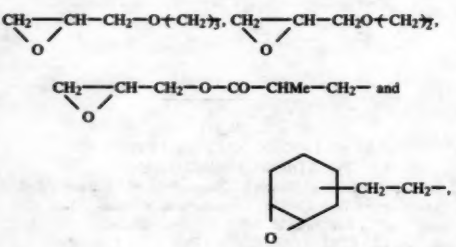
U.S. Cl. 524—860 **12 Claims**

1. A liquid silicon rubber composition which comprises:

(A) a first organopolysiloxane having at least two epoxy groups in a molecule represented by the average formula

$$R_a^1R_b^2SiO_{\frac{4-a-b}{2}}$$

in which R^1 is an atom or a group selected from the group consisting of a hydrogen atom, a hydroxy group and a monovalent organic group having 1 to 9 carbon atoms, R^2 is an epoxy-containing group selected from the group consisting of the groups expressed by the formula of



Me being a methyl group, the suffix a is a positive number not exceeding 4 and the suffix b is a positive number not exceeding 1 with the proviso that a+b is in the range from 1.8 to 3.0;

(B) a second organopolysiloxane having at least two amino groups in a molecule represented by the average unit formula

$$R_b^3R_d^4SiO_{\frac{4-c-d}{2}},$$

in which R^3 is a hydrogen atom, a hydroxy group or a monovalent organic group having 1 to 9 carbon atoms, R^4 is a 3-aminopropyl group of the formula $NH_2(CH_2)_3$ or a 3-(2-aminoethylamino)propyl group of the formula $NH_2(CH_2)_2NH(CH_2)_3$, the suffix c is a positive number not exceeding 4 and the suffix d is a positive number not exceeding 1 with the proviso that c+d is in the range from 1.8 to 3.0, and

(C) a curing catalyst for epoxy compounds selected from the group consisting of aliphatic tertiary amines, imidazoles, tertiary phosphines, quaternary ammonium salts and trifluoroboron complex salts, the proportion of the amounts of the components (A) and (B) being such that the molar ratio of the epoxy groups in the component (A) to the amino groups in the component (B) is in the range from 0.2 to 5.0.

4,584,343

CROSSLINKABLE FLUORINE-CONTAINING COPOLYMERS, SURFACE-COATINGS BASED ON THESE COPOLYMERS, AND THE USE THEREOF

Gernot Löhr, Burgkirchen; Josef Mondt, Königstein, and Hans Gräff, Schlangenbad, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 27, 1984, Ser. No. 686,727

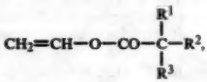
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347655

Int. Cl.⁴ C08F *214/18, 214/26, 218/10*

U.S. Cl. 525—60 **4 Claims**

1. A crosslinkable fluorine-containing copolymer, comprising

(a) 20 to 80 mol % of copolymerized units of a vinyl ester of the formula



in which

R^1, R^2 and R^3 are branched or straight-chain alkyl radicals or cycloakyl radicals and at most one of these radicals is hydrogen, the total acyl radical of the vinyl ester having at least 9 and at most 28 carbon atoms,

(b) 5 to 50 mol % of copolymerized units of a vinyl ester of the formula

$$CH_2{=}CH{-}O{-}CO{-}R^4$$

in which

R^4 is a straight-chain alkyl radical having 1 to 3 carbon atoms, wherein 90 to 100% of the copolymerized units of said vinyl ester of component (b) are present in the OH form obtained by conversion of the ester groups of said copolymerized vinyl ester units of component (b) into OH groups by solvolysis subsequently to the copolymerization of components (a), (b) and (c), and

(c) copolymerized units of a fluoroolefin in a quantity which makes the sum of the components a+b+c up to 100, but with the proviso that at least 10 mol % of copolymerized units of this fluoroolefin are present in the copolymer.

4,584,344

TOUGH THERMOPLASTIC NYLON COMPOSITIONS

Massimo Baer, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 306,971, Sep. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 202,956, Nov. 3, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 314,348

Int. Cl.⁴ C08L *78/06, 51/04*

U.S. Cl. 525—66 **19 Claims**

1. A multiphase thermoplastic composition consisting essentially of 55 to 99 parts by weight of a polyamide matrix resin of number average molecular weight in the range of about 5000 to 30,000 and 1 to 45 parts by weight of a multiphase core//-shell polymer comprising about 50 to about 90 parts by weight

of a crosslinked elastomer core and about 10 to about 50 parts by weight of a rigid thermoplastic polymer shell of glass transition temperature at least about 35° C., comprising from about 1 to about 25 parts by weight of an interpolymerized ethylenically unsaturated carboxylic acid monomer, from about 20 to about 80 parts by weight of interpolymerized styrene, from about 0 to about 79 parts by weight of an interpolymerized C_1 to C_8 alkyl acrylate or methacrylate and from about 0 to about 45 parts by weight of interpolymerized acrylonitrile or methacrylonitrile based on 100 parts by weight of shell polymer, wherein the multiphase core//shell polymer has a core of weight average particle diameter of at least about 0.3 micron and a rigid shell of average thickness of at least about 0.025 micron.

4,584,345

HEAT-RESISTANT, HIGH-IMPACT RESIN COMPOSITION

Kazunobu Tanaka, Himeji, and Zenichi Maruo, Sakai, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed May 29, 1984, Ser. No. 614,915
Claims priority, application Japan, Jun. 1, 1983, 58-97649
Int. Cl.[4] C08L *51/04, 69/00*
U.S. Cl. 525—67 **4 Claims**

1. A synthetic thermoplastic resin composition having high impact and heat resistance, the resin component of which consists essentially of: a blend of

A. a graft copolymer obtained by graft-copolymerizing
(1) 100 parts by weight of a mixture consisting of
(a) from 65 to 95 parts by weight of styrene, substituted styrenes or mixture thereof, and
(b) from 5 to 35 parts by weight of an unsaturated dicarboxylic acid anhydride onto
(2) from 5 to 50 parts by weight of a first rubbery polymer obtained by addition polymerization of an ethylenically unsaturated monomer;

B. a graft copolymer obtained by graft-copolymerizing
(1) 100 parts by weight of a mixture consisting of
(a) from 20 to 80 parts by weight of styrene, substituted styrenes, or mixture thereof, and
(b) from 80 to 20 parts by weight of a methacrylate ester monomer onto
(2) from 10 to 60 parts by weight of a second rubbery polymer obtained by addition polymerization of a diene, and

C. an aromatic polycarbonate resin, said blend containing from 10 to 60% by weight of component C and the balance is component A and component B, wherein the weight ratio of component A/component B is from 95/5 to 50/50.

4,584,346

CRAZE-RESISTANT TRANSPARENT RESINOUS POLYMODAL BLOCK COPOLYMERS

Alonzo G. Kitchen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 29, 1984, Ser. No. 584,569
Int. Cl.[4] C08L *53/02*
U.S. Cl. 525—98 **63 Claims**

1. A sequential mode of block copolymerization comprising:
polymerizing under solution polymerization conditions at least one monovinylarene monomer and at least one conjugated diene monomer in a ratio of about 55 to 95 weight percent monovinylarene and 45 to 5 weight percent conjugated diene, by a sequential charge polymerization process wherein at least two separate charges consisting of said conjugated diene, at least two separate charges consisting of said monovinylarene, and at least two charges of a monoalkali metal initiator are employed; at least one separate charge of each of said monovinylarene and of said conjugated diene follows the last charge of said monoalkali metal initiator; at least one separate charge of conjugated diene precedes the last charge of monoalkali metal initiator; each separate monomer charge homopolymerizes to substantial completion prior to addition of any subsequent charge; the total of the number of separate charges of each of said conjugated diene, of said monovinylarene, and of said monoalkali metal initiator, is not in excess of 3, and thereafter coupling with a polyfunctional coupling agent;
wherein said sequential charge polymerization process employs a charge order:

Charge Order	
1/2	L/S
3	B
4/5	L/S
6	B
7/8	L/S
9	B
10	C

where
L=hydrocarbyl monoalkali metal initiator addition,
S=monovinylarene monomer addition,
B=conjugated diene addition, and
C=coupling agent addition;
thereby producing a polymodal, craze-resistant, low color, resinous coupled copolymer.

4,584,347

MODIFIED POLYOLEFIN FIBER

Gary A. Harpell, Morristown; Sheldon Kavesh, Whippany; Igor Palley, Madison, and Dusan C. Prevorsek, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 430,577, Sep. 30, 1982, Pat. No. 4,455,273. This application Apr. 6, 1984, Ser. No. 597,283
Int. Cl.[4] C08L *23/06, 23/30, 59/02, 23/08*
U.S. Cl. 525—119 **15 Claims**

1. A stretched fiber having tenacity at least 15 g/denier, tensile modulus at least 500 g/denier and main melting temperature at least 140° C., comprising polyethylene of molecular weight at least about 500,000 and a polymeric additive selected from the group consisting of copolymers containing monoolefins as primary monomers, polyolefins of molecular weight not greater than 250,000, oxidized polyolefins and polyoxymethylenes, with the weight of polymeric additive being at least 2% of the weight of the polyethylene.

4,584,348

POLYMER COMPOSITION OF OLEFIN/CARBOXYLIC ACID COPOLYMER AND EZASTOMER

Riichiro Nagano, Hiroshima, Japan, assignor to Mitsui Petrochemical Industries, Inc., Tokyo, Japan

Filed Sep. 19, 1984, Ser. No. 651,893
Claims priority, application Japan, Sep. 19, 1983, 58-171184
Int. Cl.[4] C08L *23/20, 23/22, 23/08, 23/16*
U.S. Cl. 525—207 **16 Claims**

15. A polymer composition having adhesion to polar materials comprising

(A) 88 to 95 parts by weight of a copolymer of ethylene with from 10^{-6} to 5×10^{-3} gram-equivalent, per gram of the copolymer (A) of an unsaturated carboxylic acid compound selected from the group consisting of acrylic acid, methacrylic acid, and maleic anhydride, said copolymer having an intrinsic viscosity [η] of 0.7 to 7 dl/g and a crystallinity of at least 25%, and

(B) 12 to 5 parts by weight of a thermoplastic elastomer having an initial modulus of not more than 80 kg/cm^2, a glass transition temperature of from −130° to −20° C. and a weight average molecular weight ($\overline{M}w$) of at least

500,000, said elastomer (B) being dispersed in the form of particles having an average circle equivalent diameter of 0.1 to 5 microns in a matrix of the copolymer (A).

4,584,349

METHOD AND COMPOSITION FOR IMPROVED MELT PROCESSABILITY OF CHLORINATED POLYVINYL CHLORIDE

Marvin H. Lehr, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Jan. 28, 1985, Ser. No. 695,765

Int. Cl.[4] C08L *27/24, 33/12*

U.S. Cl. 525—227 **5 Claims**

1. A composition of matter comprising a polymer blend consisting of chlorinated polyvinyl chloride having a chlorine content not less than about 60% nor greater than about 66% by weight and poly methylmethacrylate, the polymethylmethacrylate comprising not more than 80% by weight of the blend, the blend being a substantially single phased composition possessed of a single glass transition temperature in excess of the glass transition temperature of either pure polymer blend component thereof.

4,584,350

METHOD FOR IMPROVING GREEN STRENGTH PROPERTIES OF VULCANIZABLE RUBBER COMPOSITIONS

James A. Davis, Uniontown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 24, 1984, Ser. No. 644,082

Int. Cl.[4] C08L *7/00, 9/00, 9/06, 23/34*

U.S. Cl. 525—232 **1 Claim**

1. A method for improving the green strength properties of vulcanizable rubber compositions comprising the step of:

mixing a chlorosulfonated polyethylene with said vulcanizable rubber composition prior to curing in an amount ranging between 5 to 25 weight percent of the rubber in said composition;

wherein said rubber composition is selected from the group consisting of natural rubber, synthetic rubber and mixtures thereof and said synthetic rubbers are selected from the group consisting of styrene-butadiene rubber, polybutadiene and synthetic isoprene rubber.

4,584,351

CHLOROSULFONATION OF CHLORINATED POLYETHYLENE

Robert R. Blanchard, Brusly, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 9, 1984, Ser. No. 659,046

Int. Cl.[4] C08F *8/36*

U.S. Cl. 525—344 **13 Claims**

1. An anhydrous process for preparing finely-divided, particulate chlorosulfonated polyethylene, the process comprising two sequential steps:

A. providing a finely-divided, pulverulent, free-flowing chlorinated polyethylene starting material which is generally free of water and oxygen, the starting material (1) being prepared from high density polyethylene having a weight average molecular weight of from about 40,000 to about 300,000, and (2) having (a) a chlorine content of from about 20 to about 48 percent by weight of polymer, (b) a 100 percent modulus of from about 0.5 to about 4.8 Mega Pascals, and (c) a relative crystallinity of from about 0 to about 15 percent; and

B. fluidizing the starting material with a gaseous mixture of sulfur dioxide and chlorine while said starting material is in the presence of chlorine free radicals, the gaseous mixture having a ratio of sulfur dioxide to chlorine of from about 1:1 to about 16:1, and the chlorine free radicals being generated by a means selected from the group consisting of ultraviolet light radiation having a wavelength sufficient to generate chlorine free radicals and chemical free radical initiators at a temperature within a temperature range of from about 20° to about 100° Centigrade and for a period of time sufficient to obtain chlorosulfonated polyethylene having a sulfur content of from about 0.8 to about 2.5 percent by weight of polymer and a chlorine content of from about 20 to about 50 percent by weight of polymer.

4,584,352

PROCESS FOR POLYMERIZING POLY-OXAZOLINE IN AN ETHYLBENZENE DILUENT

Daniel A. Beaudoin, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 1, 1985, Ser. No. 697,299

Int. Cl.[4] C08G *73/00*

U.S. Cl. 525—410 **8 Claims**

1. A process for the polymerization of poly-2-alkyl-2-oxazoline characterized by employing ethylbenzene as the diluent.

4,584,353

POLYESTER BLOCK COPOLYMER COMPOSITION

Takuma Kobayashi; Hironobu Kitagawa; Chikara Sugitawa, and Shigeo Kobayashi, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 497,470, May 23, 1983, abandoned. This application Oct. 15, 1984, Ser. No. 660,618

Claims priority, application Japan, May 26, 1982, 57-90201

Int. Cl.[4] C08L *67/02, 67/04*

U.S. Cl. 525—438 **5 Claims**

1. A polyester block copolymer composition which comprises (a) 2 to 95 parts by weight of a polyester block copolymer obtained by reacting a crystalline aromatic polyester and a monomeric lactone in a weight ratio ranging from 95/5 to 5/95 and (b) 98 to 5 parts by weight of a polytetramethylene terephthalate, and (c) wherein a mono- or more functional epoxy compound is incorporated in an amount of 0.2 to 10% by weight based on the total weight of the composition.

4,584,354

GRAFT COPOLYMERS AND THE METHOD OF THEIR PREPARATION

Slavko Hudecek; Ivana Hudĕckova, and Pavel Cefelin, all of Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved of Prague, Praha, Czechoslovakia

Continuation-in-part of Ser. No. 366,570, Apr. 8, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 662,249

Claims priority, application Czechoslovakia, Apr. 17, 1981, 2942-81

Int. Cl.[4] C08F *283/04, 265/10*

U.S. Cl. 525—454 **4 Claims**

1. Grafted copolymers, comprising a basic polymer chain formed by monomer units selected from the group consisting of acrylates, methacrylates, acrylamide, styrene and N-vinyl-2-pyrrolidone, and side branches formed by 10–80 weight percent by oligourethanes based on aliphatic, aromatic and alkyl-aromatic diisocyanate and aliphatic low-molecular-weight diols having 2–4 carbon atoms in the molecule, said side branches and said basic polymer chain being linked through a single terminal ethylenic unsaturated bond introduced into said side branches through the reaction of 0.03–0.25 mol of hydroxyaikyl acrylate or methacrylate with each mol diisocyanate in the presence of an aprotic solvent, said copolymer having a physical network comprising rigid crystalline urethane-diol micro-domains capable of being reversibly broken down by heating and reformed by cooling.

4,584,355

SILICONE PRESSURE-SENSITIVE ADHESIVE PROCESS AND PRODUCT WITH IMPROVED LAP-SHEAR STABILITY-I

John D. Blizzard, Bay City, and Dipak Narula, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 29, 1984, Ser. No. 665,805
Int. Cl.[4] C08L *83/06*
U.S. Cl. 525—477 36 Claims

1. A method of making a silicone pressure-sensitive adhesive composition having improved lap shear stability which consists essentially of the steps of:

(I) mixing

(A) from 40 to 70 inclusive parts by weight of at least one benzene-soluble resin copolymer containing silicon-bonded hydroxyl radicals and consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units in a mole ratio of from 0.6 to 0.9 $R_3SiO_{\frac{1}{2}}$ units for each $SiO_{4/2}$ unit present,

(B) from 30 to 60 parts by weight of at least one polydiorganosiloxane consisting essentially of $ARSiO$ units terminated with endblocking $TRASiO_{\frac{1}{2}}$ units, each said polydiorganosilozane having a viscosity of from 100 centipoise to 30,000,000 centipoise at 25° C., and each T is R— or X—,

(C) a sufficient amount of at least one organosilicon endblocking agent capable of generating an endblocking triorganosilyl unit of the formula ZR_2Si— to provide a 1:0.8 to 1:3 mole ratio of total silicon-bonded hydroxyl and X radicals present in said (A) and (B) to total endblocking triorganosilyl units provided by all endblocking agent present, said agent being selected from the group consisting of ZR_2SiNH_2 and $(ZR_2Si)_2NH$,

(D) from 0.5 to 10 moles of water per mole of =NH provided by said (C), and

(E) optionally, an effective amount of an organic solvent which is inert with respect to (A), (B), (C) and (D) to reduce the viscosity of a mixture of (A), (B), and (C),

(II) condensing (A), (B) and (C) at a temperature of from 80° C. to 160° C. and at the same time at least periodically removing any condensation by-products from the mixture at least until a substantial amount of the endblocking triorganosilyl units have reacted with the silicon-bonded hydroxyl radicals and X radicals of said (A) and (B), and

(III) stripping substantially any remaining condensation by-products and (D) from the mixture after the condensation reaction of step II is substantially complete,

wherein each R is a monovalent organic radical selected from the group consisting of hydrocarbon radicals of from 1 to 6 inclusive carbon atoms, each X radical is selected from the group consisting of HO—, H— and R'O— radicals, each R' is an alkyl radical of from 1 to 4 inclusive carbon atoms, each A radical is selected from the group consisting of R— and halohydrocarbon radicals of from 1 to 6 inclusive carbon atoms, each Z radical is A— or QR''—, each R'' is a divalent alkylene radical of from 1 to 6 inclusive carbon atoms, each Q is an organofunctional monovalent radical selected from the group consisting of RCOE'—, RE'OC—, NC—, R'E'—, HO—, G_2N—, $HO(R''O)_n$— where E' is —O—, —NH—or —S— where n has a value of from 1 to 6 and each G is R'— or H—.

4,584,356

METHOD FOR MAKING SILICONE-ORGANIC BLOCK POLYMERS

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1984, Ser. No. 667,929
Int. Cl.[4] C08F *283/12*
U.S. Cl. 525—479 11 Claims

1. A method for making silicone-organic block polymers which comprises,

(A) initiating the free-radical polymerization of a free radical polymerizable organic monomer by heating in the presence of an organic solvent, a mixture of such free-radical polymerizable organic monomer and a polydiorganosiloxane having in its backbone or in the terminal position, at least one chemically combined bissilylpinacolate radical capable of forming a free-radical initiator upon thermolysis,

(B) recovering a silicone-organic block polymer from the mixture of (A).

4,584,357

LATEX TREATED CATIONIC CELLULOSE PRODUCT AND METHOD FOR ITS PREPARATION

Margot J. Harding, Federal Way, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jun. 20, 1984, Ser. No. 622,527
Int. Cl.[4] C08L *1/08;* D21C *9/00*
U.S. Cl. 525—54.21 22 Claims

1. A cellulose based product which comprises:

a. a fibrous cationic cellulose prepared by the treatment under aqueous alkaline conditions of cellulose with a material from the group consisting of a reaction product of epichlorohydrin and dimethylamine, said reaction product further modified with a crosslinking agent, and mixtures thereof wherein the crosslinking agent, if present, is selected from the group consisting of ammonia and a primary aliphatic diamine of the type $H_2N—R—NH_2$ where R is an alkylene radical of from 2 to 8 carbon atoms; and

b. from 0.1 to 30%, on a dry weight basis, of a polymeric capable of being emulsified into an anionic dispersion, said polymer being uniformly dispersed on the fibrous cellulose.

4,584,358

CALCIUM-TOLERANT N-SUBSTITUTED ACRYLAMIDES AS THICKENERS FOR AQUEOUS SYSTEMS

Charles L. McCormick, and Kenneth P. Blackmon, both of Hattiesburg, Miss., assignors to University of Southern Mississippi, Hattiesburg, Miss.

Filed Jun. 12, 1985, Ser. No. 743,857
Int. Cl.[4] C08F *120/58*
U.S. Cl. 526—240 17 Claims

1. A water-soluble, random polymer of monomers comprising, by mole percent:

(a) from about 1 to 99 percent of acrylamide;

(b) from about 1 to 99 percent of an alkaline or alkali metal 3-acrylamido-3-methylbutanoate; and

(c) from 0 to about 30 percent of one or more copolymerizable olefinically unsaturated monomers having at least one polymerizable ethylenic double bond,

in which the polymer has an average molecular weight greater than about 50,000.

4,584,359

VINYL POLYMER MEMBRANES

Hans-Josef Sterzel, Dannstadt-Schauernheim; Axel Sanner, Frankenthal, and Peter Neumann, Wiesloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

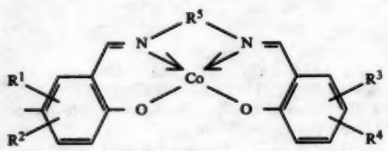
Filed Feb. 26, 1985, Ser. No. 705,793
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1984, 3407148
Int. Cl.[4] C08F *30/04*
U.S. Cl. 526—241 2 Claims

1. A membrane of a vinyl polymer comprising

(a) from 10 to 90 mole % of units derived from monomers of the formula II

II

where A is a Co(salene) radical of the formula I



I

where R^1, R^2, R^3 and R^4 are each hydrogen, methyl, methoxy, fluorine or trifluoromethyl and R^5 is —CH_2—CH_2— or

and

(b) from 10 to 90 mole % of units which are derived from vinylpyridines, and

(c) from 0 to 80 mole % of units which are derived from vinyl monomers which are copolymerizable with (a) and (b).

4,584,360

PROCESS FOR THE PREPARATION OF POLYDIORGANOSILOXANES CONTAINING HYDROXYARYLOXY TERMINAL GROUPS

Winfried Paul; Werner Nouvertné, both of Krefeld, Fed. Rep. of Germany; Dieter Neuray, Pittsburgh, Pa.; Helmut Steinberger, Leverkusen, and Wolfgang Grape, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 13, 1984, Ser. No. 600,046

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 3314191; Sep. 26, 1983, 3334782

Int. Cl.[4] C08G *77/06*

U.S. Cl. 528—14 **3 Claims**

1. A process for the preparation of polydiorganosiloxanes containing α,ω-hydroxy-aryloxy terminal groups, characterized in that at least one polydiorganosiloxane containing α,ω-bisacyloxy terminal groups is reacted with at least one diphenol in a molar ration of 1:2 to 1:20, using at least one inorganic base selected from the group consisting of alkali metal carbonates and alkaline earth metal carbonates in at least stoichiometric quantities, base on the moles of the polydiorganosiloxanes containing α,ω-bisacyloxy terminal groups used.

4,584,361

STORAGE STABLE, ONE PART POLYORGANOSILOXANE COMPOSITIONS

Gloria Janik, and Peter Y. K. Lo, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 740,786, Jun. 3, 1985, abandoned. This application Jul. 18, 1985, Ser. No. 756,208

Int. Cl.[4] C08G *77/06*

U.S. Cl. 528—15 **9 Claims**

1. A storage stable, heat curable one-part polyorganosiloxane composition consisting essentially of the product obtained by mixing

(1) at least one organosiloxane copolymer consisting essentially of from 80 to 96.5 mol percent of $(CH_3)_2SiO$ units, from 2.0 to 10.0 mol percent of $CH_3SiO_{1.5}$ units, from 1.25 to 6.0 mol percent of $(CH_3)_3SiO_{0.5}$ units and from 0.25 to 4.0 mol percent of $(CH_3)_2(CH_2{=}CH)SiO_{0.5}$ units;

(2) an organohydrogensiloxane containing at least two silicon-bonded hydrogen atoms per molecule, no more than one silicon-bonded hydrogen per silicon atom and organic radicals selected from the group consisting of alkyl containing from 1 to 6 carbon atoms per radical, phenyl and 3,3,3-trifluoropropyl, said organohydrogensiloxane providing from 0.7 to 1.2 silicon-bonded hydrogens per silicon-bonded vinyl radical present in said composition;

(3) a platinum catalyst in an amount sufficient to promote the reaction of (1) and (2) in the absence of an inhibitor; and

(4) a platinum catalyst inhibitor, said composition being characterized by the presence of a platinum catalyst inhibitor of the general formula $R_2^1NR^3NR_2^2$ or R^4NH_2 in an amount sufficient to impart long term storage stability to said compositions at 40° C. without inhibiting the catalytic activity of (3) at 135° C., where each R^1 is individually an alkyl radical containing from 1 to 4 carbon atoms, R^2 is R^1 or hydrogen, R^3 represents an alkylene radical containing from 2 to 4 carbon atoms, and R^4 represents an alkyl radical containing from 2 to 4 carbon atoms.

4,584,362

BISMUTH CATALYST SYSTEM FOR PREPARING POLYURETHANE ELASTOMERS

Arthur R. Leckart, Woodbridge, and H. Victor Hansen, Denville, both of N.J., assignors to Cosan Chemical Corporation, Carlstadt, N.J.

Filed Feb. 27, 1985, Ser. No. 706,439

Int. Cl.[4] C08G *18/14, 18/22*

U.S. Cl. 528—55 **9 Claims**

1. A process for preparing a polyurethane elastomer by reacting a polyol selected from polyether polyols and polyester polyols with an organic polyisocyanate wherein the ratio of NCO groups to hydroxyl groups is from 0.70 to 1 to 1.35 to 1 in the presence of a catalytic amount of a bismuth salt of a carboxylic acid having from 2 to 20 carbon atoms in the molecule, which salt is the sole catalyst in the reaction mixture.

4,584,363

THERMOSET RESINS BASED ON BICYCLIC AMIDE ACETAL MODIFIED UNSATURATED POLYCARBOXYLIC ACIDS, POLYISOCYANATES AND VINYL MONOMERS

Anil Goel, Worthington, and Timothy Tufts, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 16, 1985, Ser. No. 776,246

Int. Cl.[4] C08G *18/38, 18/30, 18/68*

U.S. Cl. 528—73 **18 Claims**

1. The process for preparing a thermoset resin comprising interpolymerizing a mixture of

(A) a polyol resulting from the reaction of an olefinically unsaturated polycarboxylic acid and a bicyclic amide acetal,

(B) a polyisocyanate, and

(C) a vinyl monomer component at a temperature in the range of from about room temperature to 200° C. and at a pressure in the range of from about atmospheric to 100 atmospheres.

4,584,364

PHENOLIC-CAPPED IMIDE SULFONE RESINS

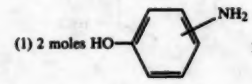
Hyman R. Lubowitz, Rolling Hill Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash. and TRW, Inc., Redondo, Calif., a part interest to each

Continuation of Ser. No. 576,790, Feb. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 321,119, Nov. 13, 1981, abandoned. This application Nov. 20, 1984, Ser. No. 673,229

Int. Cl.[4] C08G 73/10

U.S. Cl. 528—128 13 Claims

1. A cross-linkable oligomer formed by reacting:



(2) n+1 moles of an aliphatic dianhydride and

(3) n moles of at least one member selected from the group consisting of polysulfones and polyethersulfones terminated with two amino groups,

wherein n is selected so that said oligomer has a molecular weight between about 800 and 5000.

4,584,365

PRODUCTION OF POLYMER FROM METAL ALKOXIDE AND REACTION MIXTURE OF CARBOXYLIC ACID AND HYDROXY COMPOUND

Sivananda S. Jada, Englewood, and Jon F. Bauer, Littleton, both of Colo., assignors to Manville Sales Corporation, Denver, Colo.

Filed Feb. 15, 1985, Ser. No. 702,095

Int. Cl.[4] C08G 77/02

U.S. Cl. 528—271 12 Claims

1. A process for the production of a polymeric substance from a silicon alkoxide comprising steps of:

(a) reacting at least a monofunctional carboxylic acid and at least a monofuntional hydroxylated organic compound in the presence of an esterification catalyst to yield a composition comprising water in situ, and thereafter;

(b) adding to said composition comprising water in situ a silicon alkoxide in an amount sufficient to form a polymeric network of at least partially hydrolyzed silicon alkoxide.

4,584,366

PROCESS FOR THE CRYSTALLIZING, DRYING AND AFTERCONDENSATION OF POLYCONDENSATES

Lüder Gerking, and Dieter O. Taurat, both of Berlin, Fed. Rep. of Germany, assignors to Karl Fischer Industrieanlagen GmbH, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 480,598, Mar. 30, 1983, abandoned. This application Dec. 20, 1984, Ser. No. 683,963

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3213025

Int. Cl.[4] C08G 63/70, 63/74

U.S. Cl. 528—502 6 Claims

1. A process for the crystallizing, drying and aftercondensation of polycondensates, such as polyester, comprising: continuously introducing especially amorphous and moist polymer into a reactor in a granular or pulverous form to flow downwards through the reactor under gravity; passing a hot gas through the reactor in counter-current flow, the upper portion of the reactor being formed as a single, continuous shaft or column; simultaneously crystallizing and pre-drying the polymer granulate while moving or stirring the polymer by agitation relative to its downward movement; and subsequently drying and aftercondensing the polymer granulate without separation or interruption in a further, lower portion of the continuous shaft or column.

4,584,367

REACTIVE DISAZO COMPOUND

Tadashi Matsuo, Konosu; Yutaka Iizuka, Urawa, and Koei Sato, Konosu, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00307, § 371 Date Mar. 28, 1983, § 102(e) Date Mar. 28, 1983, PCT Pub. No. WO83/00495, PCT Pub. Date Feb. 17, 1983

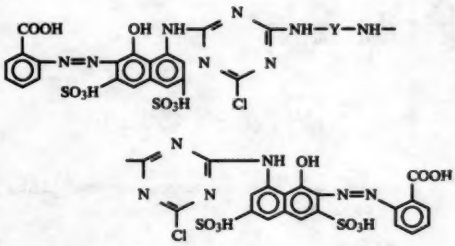
PCT Filed Aug. 6, 1982, Ser. No. 485,116

Claims priority, application Japan, Aug. 7, 1981, 56-122925

Int. Cl.[4] G09B 62/09; D06P 1/382, 3/40, 3/66

U.S. Cl. 534—634 3 Claims

1. A reactive disazo compound which, in the free acid form, is represented by the formula



wherein Y represents 2,5-dicarboxy-,4-phenylene, or 5-carboxy-1,3-phenylene.

4,584,368

β-GLUCURONIDASE ACTIVITY AND/OR PH-DEPENDENT PHARMACEUTICALS AND THIER METHODS OF PRODUCTION

David Rubin, 5 Rav Zair, Jerusalem, Israel, assignor to Adolf W. Schwimmer, Savoyon; Irwin S. Schwartz, Tel-Aviv and David Rubin, Jerusalem, all of, Israel

Filed Oct. 13, 1978, Ser. No. 951,269

Int. Cl.[4] C07H 15/00, 15/20

U.S. Cl. 536—4.1 2 Claims

2. A method for the production of conjugates of free glucuronic acid with aglycone which are strong electron acceptors, comprising:

condensing said aglycone with methyl(tri-O-acetyl-α-D-glucopyranosyl)halide-uronate to form the methyl ester of the aglycone-tri-O-acetyl-β-D-glucuronic acid;

adding to the product of said condensing step a sufficient quantity of barium hydroxide to produce a precipitate;

separating said precipitate;

treating said precipitate with a sufficient quantity of sulfuric acid until precipitation of barium sulfate is completed;

removing the supernatant from the product of said treating step; and

drying said supernatant to obtain the free glucuronic acid conjugate of said aglycone.

4,584,369

ANTI-LEUKEMIC BETA-GLYCOSYL C-NUCLEOSIDES

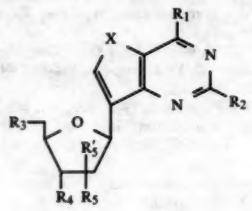
Robert S. Klein, Rye; Muill Lim, Port Chester; Wuyun Ren, New Rochelle, all of N.Y., and Joseph H. Burchenal, Noroton, Conn., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 288,848, Jul. 31, 1981, abandoned. This application Apr. 2, 1984, Ser. No. 595,637

Int. Cl.[4] C08G *18/08, 18/20*

U.S. Cl. 536—54 19 Claims

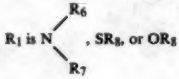
1. Beta-glycosyl C-nucleoside compound of the formula



wherein

X is NR_{10} or S

R_{10} is H or alkyl with 1 to 6 carbon atoms,



wherein R_6, R_7 and R_8 are independently selected from H or alkyl of 1 to 6 carbon atoms;

R_2 is H,

R_3 is OH,

R_4 is OH,

R_5 is OH or H,

R'_5 is OH or H with the provision that at least one of R_5 or R'_5 is H; excluding 2-deazoxoformycin; and

HCl salts thereof.

4,584,370

PROCESS FOR THE PRODUCTION OF CALCIUM CELLULOSE GLYCOLATE

Jun Taguchi, 6-24, Higashikanmake 3-chome, Takatsuki, Osaka; Hiroomi Kobayashi, 12-26 Kotsubo 1-chome, Zushi, Kanagawa, and Takahiro Koyama, 1903-3, Okihama, Aboshi-ku, Himeji, Hyogo, all of Japan

Filed Aug. 13, 1984, Ser. No. 640,313

Claims priority, application Japan, Aug. 12, 1983, 58-146484

Int. Cl.[4] C08B *11/20, 15/04*

U.S. Cl. 536—87 4 Claims

1. A process for producing calcium cellulose glycolate having excellent swelling properties and being insoluble in water comprising swelling sodium cellulose glycolate in a lower alkyl alcohol containing sufficient water to swell said sodium cellulose glycolate, dispersing said swelled sodium cellulose glycolate in said alcohol and water, adding at least an equivalent amount of calcium chloride to react with a part of said sodium cellulose glycolate for a predetermined period to form calcium cellulose glycolate and subsequently adding additional water in an amount sufficient to swell said formed calcium cellulose glycolate, continuing said reaction, and thereafter recovering the calcium cellulose glycolate.

4,584,371

CATALYTIC PROCESS FOR PREPARING 3-ESTER-METHYL CEPHALOSPORINS FROM DESACETYL-7-AMINOCEPHALOSPORANIC ACID

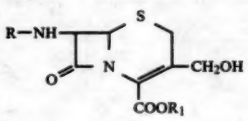
Joseph M. Timko, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 1, 1984, Ser. No. 585,337

Int. Cl.[4] C07D *501/24*

U.S. Cl. 544—16 5 Claims

1. A process which comprises reacting a compound of the formula



(II)

where

R is an amino protecting group;

R_1 is an alkali or alkaline earth metal cation;

with an activating acylating agent of formula (III)

$$X—Y—R_2 \quad \text{(III)}$$

wherein R_2 is the residue of an activating acyl ester forming group whose corresponding activating group acid has a pKa of less than 4.75;

Y is selected from the group consisting of —C(O)—, —S-$(O)_2$— and —S(O)—;

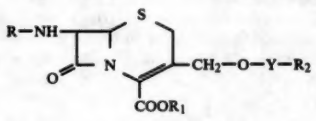
X is chlorine or bromine,

in the presence of a 4-(tertiary amino)pyridine catalyst, and in the presence of an acid absorbing tertiary amine base, present in an amount to absorb acid generated by the reaction,

at a temperature above about −78° C. to about 30° C.,

in a non-polar, liquid solvent containing a chlorinated C_1 to C_2 alkane, tetrahydrofuran, diethyl ether, hexane, heptane, octane, cyclohexane or a mixture thereof,

for a time sufficient to form a compound of the formula



(I)

wherein R, R_1, R_2 and Y are as defined hereinabove.

4,584,372

COMPOUND 3-(1,2,3,6-TETRAHYDRO-1,3-DIMETHYL-2,6-DIOXOPURINE-7-ACETYL-8-(2-PHENYLETHYL)-1-OXA-3,8-DIAZASPIRO-(4,5)DECAN-2-ONE AND A PROCESS OF PREPARATION THEREOF

Aurelio O. Venero, S. Bartolome, 12 - 3° C., and Ramon M. Pestana, Iparraguirre, 20 - 7° A., both of Lejona (Vizcaya), Spain

Filed Nov. 16, 1983, Ser. No. 552,481

Claims priority, application Spain, Nov. 23, 1982, 517622

Int. Cl.[4] C07D *473/28*

U.S. Cl. 544—230 2 Claims

1. The compound 3-(1,2,3,6-tetrahydro-1,3-dimethyl-2,6-dioxopurine-7-acetyl)-8-(2-phenylethyl)-1-oxa-3,8-diazaspiro (4.5) decan-2-one or a pharmaceutically acceptable salt thereof.

4,584,373

1-(SUBSTITUTED-PHENOXY)-3-METHYL-2-(PYRIMIDIN-5-YL)-BUTAN-2-OL USEFUL AS PLANT GROWTH REGULATING AGENTS

Graham Holmwood, Wuppertal; Klaus Lürssen, Bergisch-Gladbach; Paul Reinecke, Leverkusen; Wilhelm Brandes, Leichlingen, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 626,814

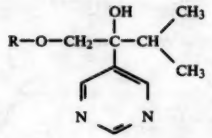
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3325761

The portion of the term of this patent subsequent to May 21, 2002, has been disclaimed.

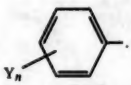
Int. Cl.[4] C07D *239/02;* A01N *43/50*

U.S. Cl. 544—225 7 Claims

1. An aroxy-pyrimidinyl-alkanol of the formula



in which R is naphthyl or



Y each independently is fluorine, chlorine, methyl, methoxy, trifluoromethoxy, or phenyl and

n is 0, 1, 2 or 3.

7. A plant growth regulating composition comprising a plant growth regulating effective amount of a compound according to claim 1 in admixture with a diluent.

4,584,374

4-THIOXO-BENZOPYRANO[2,3-D]PYRIMIDINE DERIVATIVES

Gerhard Satzinger, Denzlingen; Hubert Barth, Emmendingen; Johannes Hartenstein, Stegen-Wittental; Manfred Herrmann; Edgar Fritschi, both of St. Peter, and Ilse-Dore Schütt, Glottertal, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

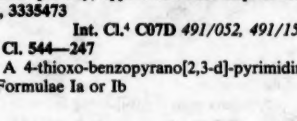
Filed Sep. 24, 1984, Ser. No. 653,185

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335473

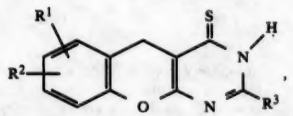
Int. Cl.[4] C07D *491/052, 491/153*

U.S. Cl. 544—247 3 Claims

1. A 4-thioxo-benzopyrano[2,3-d]-pyrimidine derivative of the Formulae Ia or Ib



Ia



Ib

in which R^1 and R^2, which may be the same or different, represent a hydrogen or halogen atom, a hydroxyl group or a straight-chain or branched alkoxy group with up to four carbon atoms or together represent an alkylenoxy- or alkylendioxy-group with up to three carbon atoms or, together an unsubstituted benzene ring condensed in the 6,7-positions and R^3 a phenyl radical or phenyl substituted by a halogen atom, a dimethylamino, a methyl or methylenedioxy group or by up to three methoxy groups.

4,584,375

FLUORINE-CONTAINING ANTIFOLATES INCAPABLE OF POLYGLUTAMATE FORMATION

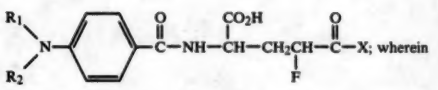
James K. Coward, Troy, N.Y., assignor to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Aug. 21, 1984, Ser. No. 642,808

Int. Cl.[4] C07D *475/08*

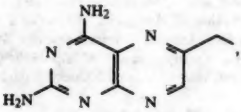
U.S. Cl. 544—258 3 Claims

1. A compound of the formula;

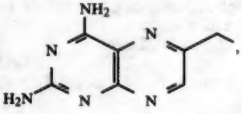


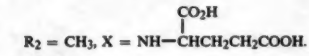
; wherein

(A)

R_1 =  , $R_2 = CH_3$, X = OH, or

(B)

R_1 =  ,

$R_2 = CH_3$, X =  .

4,584,376

1-HETEROCYCLICTHIO-1-CYCLOPROPANECARBONITRILES AS CROP PROTECTANTS

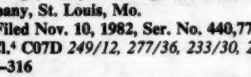
Rajendra K. Singh, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 10, 1982, Ser. No. 440,771

Int. Cl.[4] C07D *249/12, 277/36, 233/30, 239/38*

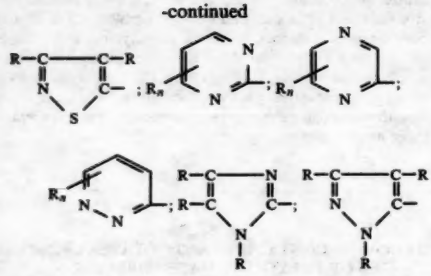
U.S. Cl. 544—316 5 Claims

1. A chemical compound having the structural formula:



wherein N-containing Het is a radical selected from the group consisting of

-continued



wherein R is individually selected from the group consisting of hydrogen, C_1–C_5 alkyl, C_1–C_5 alkoxy, C_1–C_5 haloalkyl, halogen, C_1–C_5 haloalkoxy, amino, phenyl, benzyl and phenyl substituted with up to three groups individually selected from the class consisting of C_1–C_5 alkyl, C_1–C_5 alkoxy, C_1–C_5 haloalkyl, nitro and halogen and n is 0–3.

4,584,377

NOVEL FREDERICAMYCIN A DERIVATIVES

Koichi Yokoi, Kashiwa; Hiroshi Hasegawa, Yachiyo; Tadashi Narita, Chiba; Takemitsu Asaoka, Narita; Kenichi Kukita, Kashiwa; Seiji Ishizeki, Yachiyo, and Toshiaki Nakashima, Shisuimachi, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

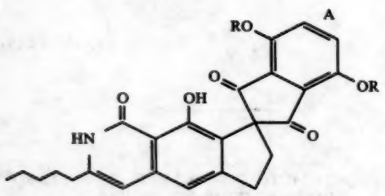
Filed Aug. 9, 1984, Ser. No. 639,113

Claims priority, application Japan, Aug. 18, 1983, 58-150522; Sep. 8, 1983, 58-165489; Sep. 9, 1983, 58-166082

Int. Cl.[4] C07D *221/18*

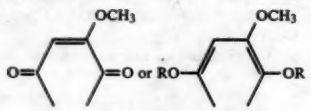
U.S. Cl. 546—15 **12 Claims**

1. A Fredericamycin A derivative of formula (I):

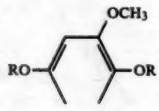


(I)

wherein R is a hydrogen atom or a C-acyl group, A denotes



and the dotted lines in the formula indicated optional double bonds, with the proviso that when A is



or when the optional double bonds are present in the formula, group R is a group other than a hydrogen atom.

4,584,378

ANTICHOLINERGIC COMPOUNDS

Gino R. Treves, and Burton M. Baum, both of Princeton, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 800,350, Feb. 10, 1969, Pat. No. 4,467,095. This application Nov. 22, 1972, Ser. No. 310,186

Int. Cl.[4] C07D *451/02, 221/02*

U.S. Cl. 546—124 **4 Claims**

1. 3-(1-azabicyclo[2.2.2.]oct-2-ene)methyl α-isopropyl-α-phenylglycolate.

4,584,379

ISOQUINOLINE THROMBOXANE SYNTHETASE INHIBITORS

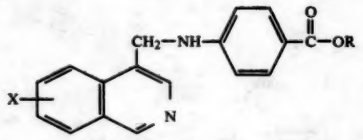
Eugene R. Wagner, Carmel, Ind., assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Jan. 22, 1985, Ser. No. 693,423

Int. Cl.[4] C07D *217/14*

U.S. Cl. 546—147 **4 Claims**

1. A compound of the formula:



wherein R is hydrogen or lower alkyl and X is lower alkyl or lower alkoxy.

4,584,380

SYNTHESIS OF 2-SUBSTITUTED-5-METHYL-PYRIDINES AND INTERMEDIATES THEREFOR

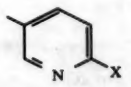
Ludwig A. Hartmann, Wilmington, Del., and John F. Stephen, West Chester, Pa., assignors to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 433,273, Oct. 7, 1982, Pat. No. 4,473,696. This application Sep. 11, 1984, Ser. No. 649,423

Int. Cl.[4] C07D *213/09*

U.S. Cl. 546—250 **14 Claims**

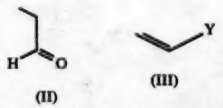
1. A method of preparing a 5-methylpyridine of the following formula (I):



(I)

wherein X is a halogen or hydroxy, from aliphatic starting materials comprising the steps of:

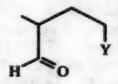
(a) reacting propionaldehyde of the following formula (II) in a Michael addition with an acrylic compund of the following formula (III):



(II) (III)

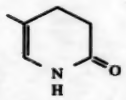
wherein Y is a moiety of the formula —COOR, —$CONH_2$ or —CN and R is alkyl of about 1 to 6 carbon atoms, aryl of about 6 to 10 carbon atoms, arylalkyl of about 1 to 8 carbon atoms in the alkyl portion and about 6 to 10 carbom atoms in the aryl portion which may be

lower alkyl- or halo- substituted in the aryl or aryl portion to produce an aldehyde of the following formula (IV):



(IV)

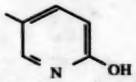
(b) cyclizing the aldehyde of formula (IV), adding an amine or an ammonium salt when Y is COOR, to produce the dihydropyridone of the following formula (V):



(V)

and

(c) oxidizing the dihydropyridone of formula (V) to the pyridine of the following formula (VI):



(VI)

and when X is a halogen, (d) halogenating the pyridine of formula (VI).

4,584,381

5-(NITRO OR HALOGEN)-3-(ALKYL)-2-(AMINOALKYL)PYRIDINES

George S. Sach, Welwyn, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 391,076, Jun. 22, 1982, Pat. No. 4,486,434. This application Sep. 17, 1984, Ser. No. 651,197

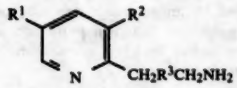
Claims priority, application United Kingdom, Jun. 27, 1981, 8119906

The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.

Int. Cl.[4] C07D *213/61*

U.S. Cl. 546—312 8 Claims

1. A compound of the formula:



or a salt thereof; where R^1 is halogen or nitro; R^2 is C_{1-4} alkyl; and R^3 is a C_{1-3} alkylene group.

4,584,382

PYRIDYL ACRYLATE COMPOUND

John W. A. Findlay, Rte. 2, Box 514, Chapel Hill, N.C. 27514, and Geoffrey G. Coker, 80 Pickhurst Pk., Bromley, England

Continuation of Ser. No. 462,873, Feb. 1, 1983, abandoned. This application Jul. 2, 1984, Ser. No. 627,187

Int. Cl.[4] C07D *213/46*

U.S. Cl. 546—314 1 Claim

1. (E)-ethyl-3-[6-(4-trifluoromethylbenzoyl)-2-pyridyl]acrylate.

4,584,383

SUBSTITUTED 2-MERCAPTO-IMIDAZOLES AND THEIR PREPARATION

Seppo S. L. Parhi, Kiviniemi, Finland, assignor to Farmos Yhtyma-Oy, Turku, Finland

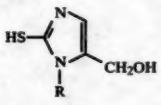
Filed Oct. 16, 1984, Ser. No. 661,487

Claims priority, application Finland, Oct. 18, 1983, 833794

Int. Cl.[4] C07D *401/06, 233/84*

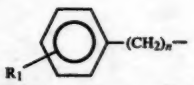
U.S. Cl. 546—278 4 Claims

1. A 1-substituted-5-hydroxymethyl-2-mercaptoimidazole of the formula



(I)

or an acid addition salt thereof, wherein R is pyridylmethyl, alkyl of 2 to 4 carbon atoms, or a radical of formula:



in which R_1 is hydrogen or halogen and n is 1–3.

4,584,384

NITRO PYRROLES

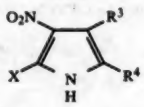
Michael L. Roantree, Welwyn Garden City, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, United Kingdom

Division of Ser. No. 507,814, Jun. 27, 1983, Pat. No. 4,483,563, which is a division of Ser. No. 343,632, Jan. 28, 1982, Pat. No. 4,407,808, which is a division of Ser. No. 159,524, Jun. 16, 1980, Pat. No. 4,331,668, which is a division of Ser. No. 043,786, May 30, 1979, Pat. No. 4,238,494. This application Aug. 6, 1984, Ser. No. 638,312

Int. Cl.[4] C07D *207/42, 401/04, 405/04, 409/04*

U.S. Cl. 546—281 9 Claims

1. A compound of the formula:



in which:

X is QSO—;

Q is lower alkyl or benzyl;

R^3 is hydrogen, lower alkyl, aryl, aryl lower alkyl or heteroaryl lower alkyl; and

R^4 is hydrogen or lower alkyl wherein aryl is phenyl optionally substituted by lower alkyl, lower alkoxy or halogen and heteroaryl is b 2-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl optionally substituted by lower alkyl or lower alkoxy.

4,584,385

ANTIBACTERIAL 2-AMINO-OXAZOLINONES AND PROCESS THEREFOR

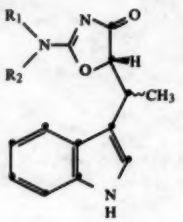
John P. Dirlam, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 592,328, Mar. 22, 1984, abandoned. This application Feb. 4, 1985, Ser. No. 697,818

Int. Cl.[4] C07D *263/08;* A61K *31/42*

U.S. Cl. 548—225 9 Claims

1. A compound of the formula:



I

wherein

R_1 is hydrogen or methyl with the proviso that when:

R_1 is hydrogen,

R_2 is C_3–C_6 cycloalkyl or mono-substituted alkyl having from about 1–4 carbon atoms wherein said substituent is selected from halogen, hydroxy, lower alkoxy, lower thioalkyl, or alkenyl or alkynyl of 2–4 carbon atoms; and when

R_1 is methyl,

R_2 is COR_3 wherein R_3 is alkyl or mono-substituted alkyl having from 1–4 carbon atoms, wherein said substituent is selected from amine, halogen, phenyl, p-hydroxyphenyl, or lower alkoxy; or amino substituted with C_1–C_4 alkyl, C_3–C_6 cycloalkyl or phenyl.

4,584,386

ALKYLTHIOMETHYL SUBSTITUTED MONO-OXAZOLINES

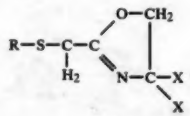
Antonio Gutierrez, Mercerville; Darrell W. Brownawell, Scotch Plains, both of N.J.; Thad O. Walker, Humble, Tex., and Stanley J. Brois, Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 559,340, Dec. 8, 1983, Pat. No. 4,491,524, which is a continuation-in-part of Ser. No. 428,826, Sep. 30, 1982, abandoned. This application Dec. 19, 1984, Ser. No. 683,401

Int. Cl.[4] C07D *263/16*

U.S. Cl. 548—237 5 Claims

1. An alkylthiomethyl oxazoline represented by the formula:



wherein R represents an alkyl radical containing from 1 to 30 carbons and each X is independently selected from the group consisting of an alkyl group or hydroxy alkyl group of the structure $-(CH_2)_nOH$ where n is 1 to 3.

4,584,387

ACYL AND ESTER DERIVATIVES OF 1,3-DIAZABICYCLO[3,3,0]OCTANE

Teruaki Mukaiyama, Tokyo; Yoji Sakito, Musashino, and Masatoshi Asami, Yokohama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

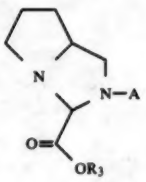
Division of Ser. No. 257,587, Apr. 27, 1981, Pat. No. 4,383,122, which is a division of Ser. No. 89,356, Oct. 30, 1979, Pat. No. 4,337,346. This application Jan. 13, 1983, Ser. No. 457,666

Claims priority, application Japan, Nov. 2, 1978, 53-135511; Nov. 6, 1978, 53-137147; Jun. 4, 1979, 54-70365; Jun. 4, 1979, 54-70366; Jun. 4, 1979, 54-70367

Int. Cl.[4] C07D *487/06*

U.S. Cl. 548—324 12 Claims

2. An optically active or racemic compound represented by the general formula (4),



(4)

wherein A represents a C_6–C_{14} carbocyclic aryl group or a C_1–C_4 alkyl-, C_1–C_4 alkoxy- or monohalogen-substituted C_6–C_{14} carbocyclic aryl group and R_3 represents a C_1–C_4 alkyl group.

4,584,388

METHOD AND COMPOSITION FOR PREPARING AROMATIC POLYCARBOXYLIC ACIDS AND THEIR ANHYDRIDES FROM POLYCARBOXIMIDES

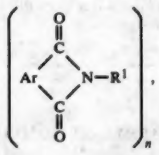
Jimmy L. Webb, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 14, 1985, Ser. No. 691,292

Int. Cl.[4] C07D *307/89;* C07C *63/00*

U.S. Cl. 549—241 9 Claims

1. In a method for preparing an aromatic polycarboxylic acid or anhydride thereof by an exchange reaction, in the presence of an exchange catalyst, between phthalic acid or phthalic anhydride, water and at least one aromatic polycarboximide having the formula



(I)

wherein Ar is an aromatic radical, R^1 is a C_{1-8} alkyl radical or a C_{6-20} aromatic hydrocarbon or halogenated aromatic hydrocarbon radical, n is 1 or 2 and the carbonyl groups in a single imide radical are attached to Ar at ortho positions, the improvement which comprises using dimethyl-n-butylamine as the exchange catalyst.

4,584,389

PROCESSES FOR PREPARING 6(R)-[2-[8(S)X2,2-DIMETHYLBUTYRYLOXY)-2(S),6(S)-DIMETHYL-1,2,3,4,4A(S),5,6,7,8,8A(S)-DECAHYDRONAPHTHYL-1(S)]ETHYL]-4(R)-HYDROXY-3,4,5,6-TETRAHYDRO-2H-PYRAN-2-ONE

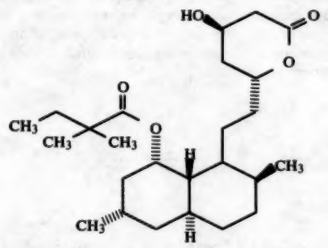
Meyer Sletzinger, North Plainfield; Thomas R. Verhoeven, Cranford, and Ralph P. Volante, East Windsor, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 540,958, Oct. 11, 1983, abandoned. This application May 23, 1985, Ser. No. 737,361

Int. Cl.[4] C07D *309/10*

U.S. Cl. 549—292 6 Claims

1. A process for the preparation of a compound of structural formula:



which comprises the steps in either order of

(1) catalytic reduction of the two double bonds of the mevinolin molecule with a platinum on alumina catalyst in an organic solvent with agitation; and

(2) C-methylation of the 2-methylbutryloxy side chain of the alkali metal salt of the mevinolin molecule with a methylating agent selected from methyl bromide, methyl chloride or methyl iodide and a strong base selected from alkali metal amide wherein the alkali metal is lithium, sodium or potassium and the amide is diethyl amide, pyrrolidide, dimethyl amide or diisopropyl amide and then relactonization with aqueous mineral acid selected from hydrochloric, hydrobromic, sulfuric or phosphoric acid.

4,584,390

CONTINUOUS PROCESS FOR THE CATALYTIC EPOXIDATION OF OLEFINIC DOUBLE BONDS WITH HYDROGEN PEROXIDE AND FORMIC ACID

Gerhard Dieckelmann, Hilden; Klemens Eckwert, Duesseldorf; Lutz Jeromin; Eberhard Peukert, both of Hilden, and Udo Steinberner, Erkrath, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

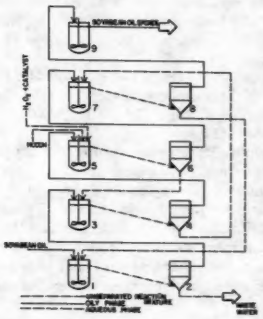
Filed May 30, 1984, Ser. No. 615,446

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320219

Int. Cl.[4] C07D *301/16*

U.S. Cl. 549—526 14 Claims

1. A multistage process for the continuous expoxidation of double bonds of an unsaturated oily compound selected from the group consisting of terminal and non-terminal olefins having more than 12 carbon atoms, unsaturated higher fatty acids and their esters with lower alkanols and lower alkanediols, unsaturated aliphatic hydrocarbon alcohols having from 8 to 18 carbon atoms and triglycerides of higher fatty acids including unsaturated higher fatty acids using performic acid formed in situ from hydrogen peroxide and formic acid in an aqueous media consisting essentially of passing the reactants, the unsaturated oily compound pound and the hydrogen peroxide/formic acid aqueous phase under ambient pressure in cross-counter flow through an at least three-stage reaction cascade from stage 1 to stage n, of which the individual stages each consist of a stirrer-equipped reaction vessel and a phase separator, the oily phase being introduced into the first reaction stage, the concentrated hydrogen peroxide solution being introduced into the penultimate reaction stage or being divided and a part introduced as a separate stream into one or more of the stages n−1 to 2 and the concentrated formic acid solution being introduced as a separate stream into one or more of the stages n−1, n−2 or n−3 to 2, the oily phase and the hydrogen peroxide/formic acid aqueous phase or acid water phase being separated from one another in a phase separator in each reac-



tion stage after issuing from the reactor and the olefinic phase successively passing through reaction stages 1 to n, while the acid water phase, after reaction stage (n−1), passes successively through the reaction stages (n−2) to 2 in counter flow to the olefin phase and then successively through stages n and 1, while the reaction temperature is maintained between 50° and 80° C. in the reactors and between 15° and 60° C. in the phase separators, and continuously recovering an epoxidized oily compound from reaction stage n and an acid water phase from reaction stage 1.

4,584,391

METHOD FOR THE PREPARATION OF ISOSORBIDE-5-NITRATE AND SODIUM ISOSORBIDE-5-NITRATE HYDRATE AS A PRECURSOR THEREOF

Toshio Itoh, Urawa; Susumu Ishiguro, Omiya; Fumitake Shimada, Kasukabe, and Kenichi Ishibashi, Urawa, all of Japan, assignors to Toshin Chemical Co. Ltd., Tokyo, Japan

Filed Nov. 23, 1984, Ser. No. 674,144

Claims priority, application Japan, Nov. 25, 1983, 58-221476; Nov. 25, 1983, 58-221477

Int. Cl.[4] C07D *493/04*

U.S. Cl. 549—464 8 Claims

2. A method for the preparation of sodium isosorbide-5-nitrate hydrate which comprises the successive steps of nitrating isosorbide with a concentrated nitric acid in a reaction medium comprising an aromatic hydrocarbon solvent, neutralizing the reaction mixture containing the nitration products of isosorbide, removing isosorbide-2,5-dinitrate from the reaction mixture and adding an aqueous solution of sodium hydroxide to the reaction mixture.

3. A method for the preparation of isosorbide-5-nitrate which comprises the successive steps of:

(a) nitrating isosorbide with a concentrated nitric acid in a reaction medium which is a mixture comprising an aromatic hydrocarbon solvent;

(b) neutralizing the reaction mixture containing the nitrates of isosorbide;

(c) removing isosorbide-2,5-dinitrate from the reaction mixture;

(d) adding an aqueous solution of sodium hydroxide to the reaction mixture to form sodium isosorbide-5-nitrate hydrate;

(e) separating the sodium isosorbide-5-nitrate hydrate from the reaction mixture;
(f) dispersing the sodium isosorbide-5-nitrate hydrate in a solvent medium; and
(g) decomposing the sodium isosorbide-5-nitrate hydrate with an acid.

4,584,392

PLATINUM AND PALLADIUM COMPLEXES

Gaylord D. Smith, Ramsey, N.J.; Douglas S. Brown, Tuxedo, N.Y.; Philip Bernstein, Glen Ridge, N.Y., and John E. Weller, Walden, N.Y., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Continuation-in-part of Ser. No. 440,449, Nov. 10, 1982, abandoned. This application Oct. 14, 1983, Ser. No. 540,871

Int. Cl.⁴ C07F *15/00*

U.S. Cl. 556—137 **8 Claims**

1. Lyophilized compositions of matter adapted for the treatment of mammals comprising initially water soluble anionic poly amino acids having at least part of the valence requirements of said polyamino-acids satisfied by a moiety of square planar coordination having the formula cis $[MLL]^{++}$ wherein M is a metal species selected from the group of divalent platinum and divalent palladium and L and L' are selected from the group of ammonia and mono and difunctional primary amines.

4,584,393

BIS(AMINOALKYL)DISILOXANES AND METHOD AND INTERMEDIATES FOR THEIR PREPARATION

Jimmy L. Webb, Ballston Lake, and Cathryn E. Olsen, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 14, 1985, Ser. No. 691,293

Int. Cl.⁴ C07F *7/10*

U.S. Cl. 556—407 **19 Claims**

1. A method for preparing bis(aminoalkyl)disiloxanes having formula I in the drawings, wherein R^1 is a C_{1-4} primary or secondary alkyl radical, phenyl or substituted phenyl and each of R^2 and R^3 is an alkylene radical containing about 1–20 carbon atoms or a C_{6-10} aryl-substituted derivative thereof, which comprises the steps of:
(A) contacting at least one acyclic olefinic mono- or disilazane of formula II, wherein each R^4 is independently hydrogen, a C_{1-4} primary or secondary alkyl radical, phenyl or substituted phenyl, X is H or $SiH(R^1)_2$ and m is from 1 to about 18, with a hydrosilation catalyst to form an intermediate; and
(B) hydrolyzing said intermediate.

4,584,394

ALKENYLBENZOYLOXYSILANES AND THEIR USE IN PRESSURE-SENSITIVE ADHESIVES

Edward Hänsel, Hochdahl; Hans Huber, Lohmar; Gerhard Geier, Lohmar-Geber, and Claus Seiler, Rheinfelden, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

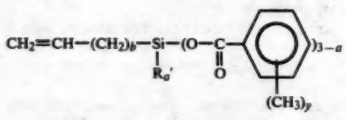
Filed Dec. 17, 1984, Ser. No. 682,431

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3346909

Int. Cl.⁴ C07F *7/04, 7/08, 7/18*

U.S. Cl. 556—442 **9 Claims**

1. An alkenylaceloxysilane of the formula



in which R' can represent identical or different moieties from the group C_{1-4}-alkyl or C_{1-4}-alkoxy, b=0 or 1, y=0 or 1 and a can be equal to 0 or 1 or 2.

4,584,395

METHOD FOR PREPARATION OF 3-CHLOROPROPYL-TRICHLOROSILANE

Peter Panster, Rodenbach; Rudolf Michel, Freigericht, both of Fed. Rep. of Germany; Wolfgang Buder, Salvador, Brazil, and Peter Kleinschmit, Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

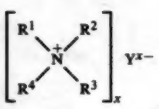
Filed Feb. 8, 1985, Ser. No. 699,696

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404703

Int. Cl.⁴ C07F *7/08*

U.S. Cl. 556—479 **11 Claims**

1. A method for the preparation of 3-chloropropyltrichlorosilane comprising reacting trichlorosilane and allylchloride together in the presence of a platinum containing polymeric organosiloxane-ammonium compound containing units represented by the formula:

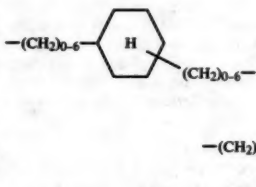


(1)

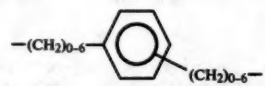
wherein R^1, R^2 and R^3 represent a group of the formula:

$$R^5—SiO_{3/2} \quad (2)$$

wherein R^5 is linear or branched chain alkylene having 1 to 12 carbon atoms, cycloalkylene having 5, 7 or 8 carbon atoms or a moitey having the formula:



or



wherein R^1, R^2 and R^3 are the same or different and the free valences of the oxygen atoms are saturated by silicon atoms or further groups of the formula (2) and/or by crosslinking bridging agents having the formula:

$$SiO_{4/2} \text{ or } SiR'O_{3/2} \text{ or } SiR_2'O_{2/2} \quad (3)$$

wherein
R' represents methyl or ethyl
and the ratio between the silicon atom and formula (2) and the silicon atom in the bridging units according to formula (3) is from 1:0 to 1:10
R^4 has the same scope of meaning as R^1, R^2 and R^3, or hydrogen, a 1 to 10 carbon atom containing linear or crosslinked alkyl, a 5 to 8 carbon atom containing cycloalkyl or benzyl,
Y^{x-} is:

$PtCl_4^{2-}$ or $PtCl_6^{2-}$

$PtBr_4^{2-}$ or $PtBr_6^{2-}$

and represents an inorganic 1 to 3 valent anion of an inorganic protonic acid which will form stable salts with an amine base, or the hydroxy group
and x is a number from 1 to 3.

4,584,396

SUBSTITUTED PHENOXYPROPIONATES AND HERBICIDAL COMPOSITIONS

Masahiro Aya, Kodaira; Junichi Saito, Mitaka; Kazuomi Yasui, Tokyo; Kozo Shiokawa, Kawasaki, and Koichi Moriya, Hachioji, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

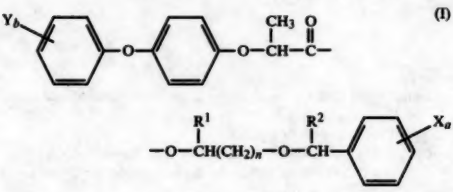
Division of Ser. No. 389,525, Jun. 17, 1982, Pat. No. 4,441,913. This application Dec. 12, 1983, Ser. No. 546,216

Claims priority, application Japan, Jun. 25, 1981, 56-97486; Sep. 16, 1981, 56-144778; Dec. 7, 1981, 56-195604; Dec. 7, 1981, 56-195605

Int. Cl.[4] C07C *69/76*

U.S. Cl. 560—63 22 Claims

1. A substituted phenoxypropionate of the formula



(I)

in which

R^1 and R^2 each independently is a hydrogen atom or a C_1 to C_6 alkyl group,

X is a hydrogen or halogen atom, a nitro, C_1 to C_6 alkyl or C_1 to C_6 alkoxy group,

a and n each independently is 1 or 2,

Y is a trifluoromethyl group, a halogen atom or a nitro, cyano or C_1 to C_6 alkyl group, and

b is 1, 2 or 3.

4,584,397

PROTEASE INHIBITORS

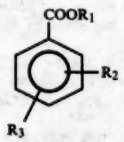
Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation of Ser. No. 492,842, May 9, 1983, Pat. No. 4,495,295. This application Oct. 24, 1984, Ser. No. 664,447

Int. Cl.[4] C07C *69/76*

U.S. Cl. 560—75 3 Claims

1. A compound of the formula:



and the pharmaceutically acceptable addition salts thereof,

wherein R_1 is:

(a) hydrogen; or

(b) alkyl of 1 to 6 carbon atoms, inclusive;

wherein R_2 is:

(a) hydroxy or

(b) alkoxy of 1 to 6 carbon atoms, inclusive;

wherein R_3 is —CH(OH)R_4;

wherein R_4 is alkyl of 13 to 25 carbon atoms, inclusive.

4,584,398

ARGINYL-3-CARBOXY-4-HYDROXYANILIDE

Katsumasa Kuroiwa; Shuichi Nakatsuyama, both of Koriyama, and Takeshi Nagasawa, Urawa, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

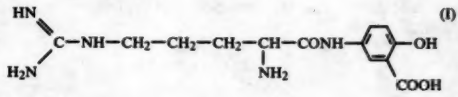
Filed Feb. 1, 1985, Ser. No. 697,333

Claims priority, application Japan, Feb. 10, 1984, 59-21901

Int. Cl.[4] C07C *129/08*

U.S. Cl. 562—439 1 Claim

1. Arginyl-3-carboxy-4-hydroxyanilide of formula (I)



(I)

and acid addition salts thereof.

4,584,399

PURIFICATION OF L-PHENYLALANINE

Charles Portal, Potomac, and James F. Walter, Ashton, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Nov. 27, 1984, Ser. No. 675,368

Int. Cl.[4] C07C *45/79*

U.S. Cl. 562—443 27 Claims

1. A method of separating L-phenylalanine from an aqueous solution comprising L-phenylalanine, cellular material, inorganic salts and organic compounds, comprising

(a) removing cellular material and proteins from said aqueous solution,

(b) contacting the resulting solution with activated carbon,

(c) separating said activated carbon from the solution,

(d) eluting L-phenylalanine from said activated carbon with water, aqueous ammonia, tetrahydrofuran or ethyl acetate,

(e) passing the L-phenylalanine-comprising eluate through an ion exchanger, and

(f) eluting L-phenylalanine from the ion exchange resin.

4,584,400

REFINING PHENYLALANINE

Masaru Otani, Kawasaki; Chiaki Sano, Tokyo, and Isao Kusumoto, Saga, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 6, 1984, Ser. No. 678,809

Claims priority, application Japan, Dec. 26, 1983, 58-251035

Int. Cl.[4] C07C *45/79*

U.S. Cl. 562—443 10 Claims

1. A process for refining phenylalanine, comprising:

(i) contacting a solution containing phenylalanine and tyrosine as the main impurity with a non-polar, highly porous synthetic adsorbent having a greater affinity towards phenylalanine than towards tyrosine until substantially only phenylalanine has been adsorbed onto the said synthetic adsorbent;

(ii) eluting phenylalanine adsorbed onto the said synthetic adsorbent; and

(iii) recovering the said phenylalanine.

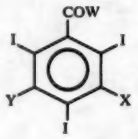
4,584,401

METHODS AND COMPOSITIONS INVOLVING POLYHYDROXYLATED POLYIODO NON-IONIC CONTRAST MEDIA

Milos Sovak, Rancho Santa Fe, and Ramachandran Ranganathan, San Diego, both of Calif., assignors to Biophysica Foundation, La Jolla, Calif.

Filed Oct. 20, 1983, Ser. No. 544,308
Int. Cl.[4] A61K *49/04*; C07C *103/24, 103/76*
U.S. Cl. 564—153 6 Claims

1. A method for preparing a non-ionic contrast medium which comprises reacting a compound of the formula:



wherein:

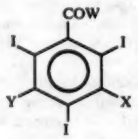
W is amino, X is carboxamido and Y is amino with acryloyl chloride to form the acrylamide derivative;

acylating the nitrogens of the carboxamido groups with acetic anhydride;

allylating the acetylated carboxamido groups with allyl halide;

oxidizing the olefinic groups of said allyl groups and said acryloyl group to form a tris-glycol product.

3. A method for preparing a non-ionic contrast medium which comprises reacting a compound of the formula:



wherein:

W is chloro, X is chlorocarbonyl and Y is amino, with allylamine to form a diallyl substituted dicarboxamide;

reacting said diallyl substituted dicarboxamide with acryloyl chloride to form the acrylamide;

oxidizing the olefins of said allyl groups and said acryloyl group to form a tris-glycol.

4,584,402

DIHYDROXYACRYL

Paul H. Weigel, Dickinson, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Oct. 29, 1984, Ser. No. 665,804
Int. Cl.[4] C07C *149/23*
U.S. Cl. 564—154 5 Claims

1. A compound of the formula:

where p is a whole integer from 1 to 12, R_1 is CH_2OH, CHO or CH_2SH, m is a whole integer from 1 to 3 and R_2 is CH_2OH or H.

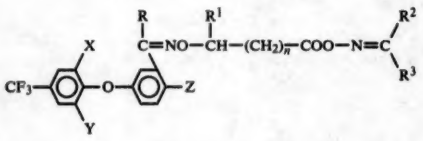
4,584,403

HERBICIDALLY ACTIVE SUBSTITUTED DIPHENYL ETHER OXIME DERIVATIVES

Dennis K. Krass, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 484,095, Apr. 11, 1983. This application Feb. 27, 1984, Ser. No. 584,181
Int. Cl.[4] C07C *131/00*
U.S. Cl. 564—255 4 Claims

1. A compound represented by the formula:



wherein:

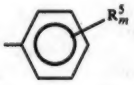
X and Y are hydrogen or halogen provided that at least one of X or Y is halogen;

Z is nitro, halogen or cyano;

R is hydrogen, halogen, C_1 to C_4 alkyl or haloalkyl, C_1 to C_3 alkoxy or alkylthio, mono or dialkylamino; or cyano;

R^1 is hydrogen or C_1 to C_3 alkyl,

R^2 or R^3 are the same or different and represent hydrogen, C_1 to C_3 alkyl,



wherein R^5 is hydrogen, halogen, hydroxy, C_1 to C_4 alkyl or haloalkyl, C_1 to C_3 alkoxy, alkylthio alkylsulfonyl or alkylsulfinyl, amino, mono- or dialkyl amino, the alkyl portion of which may be halo substituted, cyano or nitro and m is 1, 2 or 3; or

form a ring structure containing 4 to 7 carbon atoms and which may contain up to 2 hetero atoms; and

n is 0, 1, 2, 3 or 4.

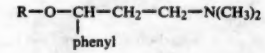
4,584,404

SUBSTITUTED PHENOXYPHENYLPROPLY DIMETHYLAMINES

Bryan B. Molloy, North Salem, and Klaus K. Schmiegel, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 872,147, Jan. 25, 1978, abandoned, which is a division of Ser. No. 432,379, Jan. 10, 1974, Pat. No. 4,314,081. This application Oct. 24, 1983, Ser. No. 544,654
The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.
Int. Cl.[4] A61K *31/205*; C07C *93/06*
U.S. Cl. 564—347 5 Claims

1. A compound of the formula



wherein R is p-chlorophenyl, p-tolyl or p-trifluoromethylphe-

nyl, and pharmaceutically-acceptable acid addition salts thereof.

5. 3-(o-tolyloxy)-3-phenylpropyldimethylamine and pharmaceutically-acceptable acid addition salts thereof.

4,584,405

ACTIVATED CARBON CATALYSTS AND PREPARATION OF LINEAR POLYETHYLENE POLYAMINES THEREWITH

Steven H. Vanderpool, New Braunfels, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 18, 1983, Ser. No. 486,148
Int. Cl.[4] C07C *85/06*
U.S. Cl. 564—479 3 Claims

1. In a method wherein monoethanolamine is reacted with ethylenediamine in the presence of a catalyst to provide an essentially noncyclic product comprising polyethylenepolyamines, the improvement for conducting said process on a continuous basis which comprises:

a. using a catalyst consisting essentially of pelleted activated carbon,

b. continuously contacting a mixture of ethylenediamine and monoethanolamine in a molar ratio of about 1 to 5 mols of ethylenediamine per mol of monoethanolamine with said pelleted catalyst at a temperature of about 200° to about 400° C. and a pressure of about 500 to about 3000 psig. to obtain an essentially noncyclic reaction product.

4,584,406

PREPARATION OF LINEAR POLYETHYLENEPOLYAMINES WITH MODIFIED CATALYSTS

Steven H. Vanderpool, New Braunfels, and Terry L. Renken, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 455,156, Jan. 3, 1983. This application Dec. 6, 1984, Ser. No. 678,864
The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.
Int. Cl.[4] C07C *85/06*
U.S. Cl. 564—479 15 Claims

1. In a method wherein monoethanolamine is reacted with ethylenediamine in the presence of a phosphorous containing catalyst to provide an essentially noncyclic product comprising polyethylenepolyamines, the improvement for conducting said process on a continuous basis which comprises:

a. using, as a catalyst, a pelleted group IV_b metal oxide having thermally chemically bonded thereto from about 0.5 wt. % to about 10 wt. % of phosphorous derived from phosphoryl chloride or phosphorous bromide,

b. continuously contacting a mixture of ethylenediamine and monoethanolamine in a molar ratio of about 1 to 5 mols of ethylenediamine per mole of monoethanolamine with said pelleted catalyst at a temperature of about 250° to about 400° C. and a pressure of about 500 to about 3000 psig to obtain an essentially noncyclic reaction product.

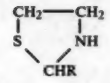
4,584,407

PREPARATION OF THIAZOLIDINE DERIVATIVES

John Hollowood, York, England, assignor to Fine Organics Limited, Middlesbrough, England

Filed Dec. 11, 1981, Ser. No. 330,015
Int. Cl.[4] C07D *277/04*
U.S. Cl. 564—487 5 Claims

4. A method for the preparation of cysteamine or an acid salt thereof comprising reacting together at atmospheric pressure a sulfur donor, said donor selected from the group consisting of an alkali metal sulfide and an alkali metal hydrosulfide, with benzaldehyde and an ethanolamine derivative of the formula, or including the radical, $XCH_2CH_2NH_2$ where X is a leaving group whereby a thiazolidine derivative of the formula



where R is phenyl, is formed, thereafter hydrolyzing said thiazolidine derivative under acid conditions.

4,584,408

PREPARATION OF 1,3-BIS(ARYLOXY)-2-PROPANOLS

Pen-Chung Wang, Midland, Mich., and James M. Renga, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 509,477, Jun. 30, 1983, abandoned. This application Jan. 7, 1985, Ser. No. 689,547
Int. Cl.[4] C07C *41/16, 43/26*
U.S. Cl. 568—48 21 Claims

1. A process for preparing 1,3-bis(aryloxy)-2-propanol compounds corresponding to the formula:

$$Ar(OX')_m$$

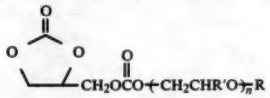
wherein

Ar is independently each occurrence an m valent aromatic moiety of up to about 30 carbons;

m is independently each occurrence an integer greater than or equal to one; and

when m is equal to one, X' is $—CH_2CHOHCH_2OAr$, and when m is greater than one, each X' is independently hydrogen or $—CH_2CHOHCH_2OX$ wherein X is $—Ar-(OX')_{m-1}$,

comprising contacting a hydroxy-substituted aromatic compound corresponding to the formula $Ar(OH)_m$ wherein Ar and m are as previously defined, with an organyl 2-oxo-1,3-dioxolan-4-ylmethyl carbonate, corresponding to the formula:



wherein R is lower alkyl or phenyl and n is a number from zero to about four, at an elevated temperature in the presence of a catalytically effective amount of an initiator.

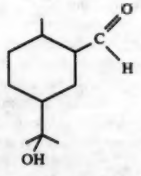
4,584,409

TERTIARY HYDROXYL CARBOXALDEHYDES

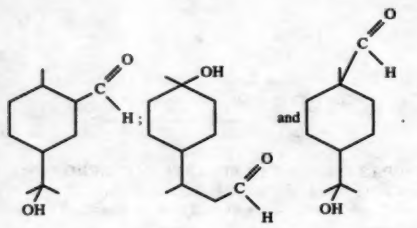
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 656,661, Oct. 1, 1984, which is a division of Ser. No. 551,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Mar. 8, 1985, Ser. No. 709,808
Int. Cl.[4] C07C *47/32, 47/11*
U.S. Cl. 568—420 2 Claims

1. A compound having the structure:



2. A mixture of compounds defined according to the structures:



4,584,410

PROCESS FOR THE PREPARATION OF HYDROXYBENZALDEHYDES

Kazuhiko Hamada; Gohfu Suzukamo, both of Osaka; Fujio Masuko, Oita, and Makoto Nakamura, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 415,293, Sep. 7, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 670,847

Claims priority, application Japan, Sep. 7, 1981, 56-141484

Int. Cl.[4] C07C *45/45*

U.S. Cl. 568—436 6 Claims

1. A process for the preparation of a mixture of salicylaldehyde and p-hydroxybenzaldehyde by the reaction of phenol with chloroform and an aqueous alkali solution in a heterogeneous system wherein the improvement comprises carrying out the reaction in the presence of a phase transfer catalyst selected from the group consisting of a cationic type quaternary salt and an amphoteric type phase transfer catalyst and in the presence of one or more aliphatic non-cyclic ether solvents.

4,584,411

HYDROFORMYLATION PROCESS

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 25, 1985, Ser. No. 704,982

Int. Cl.[4] C07C *45/50*

U.S. Cl. 568—451 6 Claims

1. In a process for the hydroformylation of an olefin oligomerization product obtained by the liquid phase oligomerization of propylene and/or butylene in the presence of a catalyst formed by reacting a nickel compound with a hydrocarbyl aluminum halide, said hydroformylation being carried out by contacting said oligomerization product with syngas in the presence of a hydroformylation catalyst to produce aldehydes or alcohols, the improvement which comprises: contacting at a temperature ranging from about 25° C. to about 300° C. at least a portion of said oligomerization product with a reforming catalyst comprising pentavalent tantalum, halogen, oxygen and an inorganic oxide substrate wherein at least one valence of tantalum is bound to oxygen which is bound to the substrate, at least one valence of the tantalum is bound to halogen and the remaining tantalum valences are bound to halogen and/or oxygen which oxygen may or may not be bound to the substrate, and then hydroformylating the resultant olefin product to produce an alcohol or aldehyde.

4,584,412

PREPARATION OF FORMALDEHYDE

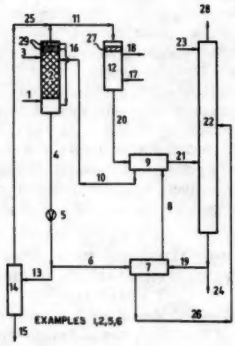
Albrecht Aicher, Frankenthal; Gunter Lehmann, Birkenheide; Norbert Petri, Frankenthal; Walter Pitteroff, Bobenheim; Günter Reuss; Hans Schreiber, both of Ludwigshafen, and Robert Sebastian, Deidesheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 23, 1985, Ser. No. 693,864

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1984, 3402995

Int. Cl.[4] C07C *45/29*

U.S. Cl. 568—473 18 Claims



1. A process for the preparation of formaldehyde by oxidative dehydrogenation of methanol as a mixture with water, in the presence of a silver catalyst at elevated temperatures, and subsequent cooling and absorption of the hot reaction gases, wherein

(a) a mixture of methanol and water with a concentration of from 50 to 90% by weight, based on the total weight of the two substances, of methanol is passed into a packed column which possesses a packing, having a total layer thickness of not less than 50 cm and a total surface area of not less than 0.5 cm^2 per cm^3 of packing, a liquid circulation of from 15 to 90 g/min per g/min of methanol fed to the column, and a concentration of from 10 to 45% by weight of methanol in the recycle liquid, the temperature at the point of entry of the recycle liquid into the column being from 50 to 86° C. and the bottom temperature being 10°–25° C. lower than this entry temperature, i.e. from 40° to 70° C.,

(b) methanol and water are separated off from the packed column with air, an inert gas and/or exit gas by stripping, the throughput being from 0.5 to 3 tonnes of methanol and water per hour per m^2 of column cross-section,

(c) the resulting gaseous mixture of methanol, water, air, inert gas and/or exit gas is converted, at a space velocity of from 0.5 to 3 tonnes of methanol per m^2 of catalyst bed cross-section per hour, in the presence of a silver catalyst and at from 550° to 750° C., and

(d) finally, the hot reaction gases are cooled and absorbed, the resulting heat of absorption, the heat of reaction and/or the heat of condensation being partly or completely used for heating the recycle liquid.

4,584,413

PURIFICATION OF TERTIARY BUTYL HYDROPEROXIDE CONTAINING PRIMARY AND SECONDARY ALKYL HYDROPEROXIDE CONTAMINANTS

William B. Thornton, Woodlyn, Pa., and Alfred E. Borchert, Cherry Hill, N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 14, 1983, Ser. No. 531,979
Int. Cl.[4] C07C 179/025
U.S. Cl. 568—576 11 Claims

1. A process for the purification of a tertiary butyl hydroperoxide obtained from the oxidation of isobutane with a molecular oxygen-containing gas and containing minor amounts of undesired primary and secondary alkyl hydroperoxide contaminants, which comprise contacting said tertiary butyl hydroperoxide at a temperature of from about room temperature to about 175° C. for a period of about 30 seconds to about 2 hours with at least 2 milliequivalents per gram of total hydroperoxides present of a hydroxide or oxide of an alkali metal or an alkaline earth metal in aqueous solution and sufficient to produce a pH of about 12 or more of the resulting solution, and recovering said tertiary butyl hydroperoxide containing substantially reduced concentrations of primary and secondary alkyl hydroperoxide contaminants.

4,584,414

PROCESS FOR PREPARING IMPROVED POLY(TETRAMETHYLENE ETHER) GLYCOL BY ALCOHOLYSIS

Gerfried Pruckmayr, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 21, 1984, Ser. No. 685,017
Int. Cl.[4] C07C 41/18
U.S. Cl. 568—617 1 Claim

1. In a process for converting poly(tetramethylene ether) diester to poly(tetramethylene ether) glycol (PTMEG) by catalytic alcoholysis using an alkali metal hydroxide or alkoxide as the catalyst, the improvement comprising a method for reducing contamination of the PTMEG with catalyst residue which comprises reacting the catalyst, after the alcoholysis reaction is substantially complete, with an excess of acetic acid which forms a catalyst-acid reaction product that is insoluble in the reaction mass, and then vaporizing the excess acid and separating the catalyst-acid reaction product from the reaction mass.

4,584,415

FORMATION OF ALKYL ETHERS FROM ALCOHOLS AND ALKENES USING AMS-1B CRYSTALLINE BOROSILICATE

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 427,011, Sep. 29, 1982. This application Jun. 10, 1985, Ser. No. 742,989
Int. Cl.[4] C07C 41/06
U.S. Cl. 568—697 20 Claims

1. A process to form an ether comprising contacting an alkene and an alcohol under conversion conditions with an AMS-1B crystalline borosilicate catalyst composition.

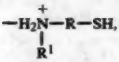
4,584,416

METHOD AND CATALYST FOR MAKING BISPHENOL

Eric J. Pressman, Schenectady, and Paul R. Willey, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

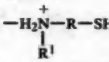
Filed Nov. 14, 1983, Ser. No. 551,624
Int. Cl.[4] C07C 39/16
U.S. Cl. 568—727 9 Claims

1. An ion-exchange resin comprising sulfonated aromatic organic polymer having 4 to 40 percent of ionically bound aminoorganomercaptan groups of the formula



based on the total moles of chemically combined sulfonated aromatic organic units and sulfonated aromatic organic units having ionically bound aminoorganomercaptan groups where R is a $C_{(3-10)}$ divalent organo radical, and R^1 is a $C_{(3-8)}$ monovalent alkyl radical.

7. A method for making bisphenol which comprises reacting a ketone and a phenol in the presence of an effective amount of a cation-exchange resin comprising a sulfonated aromatic organic polymer having from about 4 to 40 mole percent of chemically combined sulfonated aromatic organic units with ionically bound N-alkylaminoorganomercapto radicals of the formula



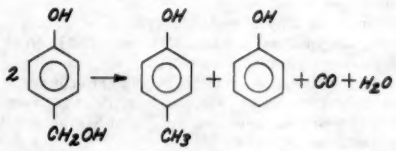
based on the total moles of chemically combined sulfonated aromatic organic units and sulfonated aromtic organic units having ionically bound aminoorganomercaptan groups where R is a $C_{(3-10)}$ divalent organo radical, and R^1 is a $C_{(3-8)}$ monovalent alkyl radical.

4,584,417

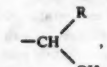
METHOD FOR PREPARING P-ALKYLPHENOLS FROM P-HYDROXYALKYLPHENOLS

John J. Talley, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 6, 1984, Ser. No. 577,098
Int. Cl.[4] C07C 37/00
U.S. Cl. 568—799 7 Claims



1. A method for preparing a p-alkylphenol in which the para-substituent has the formula CH_2R, wherein R is hydrogen, an alkyl radical containing about 1-4 carbon atoms or phenyl, which comprises contacting at least one p-hydroxyalkylphenol in which the para-substituent has the formula



at least part of said p-hydroxyalkylphenol being one in which R is hydrogen, with water and oxygen at a temperature in the range of about 350°-550° C., in the presence of at least one oxide of a Group II metal having an atomic weight less than 70.

4,584,418

PREPARATION OF BUTYNEDIOL

Joseph M. Fremont, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 15, 1985, Ser. No. 712,227
Int. Cl.[4] C07C 29/00, 33/046
U.S. Cl. 568—855 2 Claims

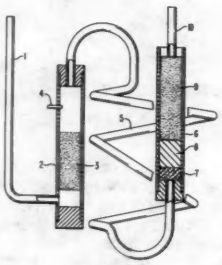
1. The process of preparing 1,4-butynediol by the reaction of acetylene and formaldehyde, using as the catalyst a complex produced by subjecting agglomerates of spheroidal masses of malachite crystals, which crystals contain 1–7% by weight of bismuth oxycarbonate and 0.5–3.5% by weight (calculated as SiO_2) of silicic acid, to the action of acetylene and formaldehyde.

4,584,419

PROCESS FOR THE PRODUCTION OF BUTANE-1,4-DIOL

Mohammad Sharif, Middlesbrough, and Keith Turner, Stockton-on-Tees, both of England, assignors to Davy McKee Ltd., London, England

Filed Nov. 21, 1984, Ser. No. 673,797
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1983, 8331793
Int. Cl.[4] C07C 29/136, 31/20
U.S. Cl. 568—864 11 Claims



1. A continuous process for the production of butane-1,4-diol which comprises:

providing a plurality of hydrogenolysis zones, including a first hydrogenolysis zone and at least one other hydrogenolysis zone connected in series therewith, each of which contains a charge of a reduced copper chromite catalyst which contains, before reduction, from about 25 to about 45% by weight of copper and from about 20 to about 34% by weight of chromium;

supplying to the first hydrogenolysis zone at a first feed temperature in the range of from about 170° C. to about 190° C. a vaporous feed stream containing hydrogen and a di-(C_1 to C_3 alkyl) ester of a C_4 dicarboxylic acid at an H_2:ester molar ratio of from about 150:1 to about 800:1 and at a rate corresponding to a liquid hourly space velocity of the ester of from about 0.1 to about 0.6 hr^{-1};

supplying to the other, or to each other, hydrogenolysis zone at a further feed temperature of from about 160° C. to about 175° C. a vaporous stream comprising reaction products from the immediately preceding hydrogenolysis zone, said further feed temperature being, in respect of the other, or in respect of at least one other, hydrogenolysis zone lower than said first feed temperature;

maintaining the plurality of hydrogenolysis zones at a pressure in the range of from about 25 bar to about 75 bar; and

recovering a product mixture containing butane-1,4-diol.

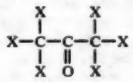
4,584,420

METHOD FOR PRODUCING VINYL CHLORIDE

Charles R. Wiedrich, Barberton, and John C. Crano, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 25, 1984, Ser. No. 623,897
Int. Cl.[4] C07C 17/34
U.S. Cl. 570—227 10 Claims

1. In a process wherein 1,2-dichloroethane is pyrolyzed in a pyrolysis zone to produce vinyl chloride, the improvement comprising conducting the pyrolysis in the presence of a pyrolysis-promoting amount of promoter represented by the formula



wherein each X in said promoter is independently chloro or bromo.

4,584,421

METHOD FOR THERMAL DECOMPOSITION OF PLASTIC SCRAPS AND APPARATUS FOR DISPOSAL OF PLASTIC SCRAPS

Kiyoshi Saito, Sapporo, and Mitsuo Nanba, Hiroshima, both of Japan, assignors to Agency of Industrial Science and Technology; Ministry of International Trade and Industry, both of Tokyo and Sun-Esu Co., Ltd., Age, all of, Japan

Filed Mar. 26, 1984, Ser. No. 593,369
Claims priority, application Japan, Mar. 25, 1983, 58-48927; Mar. 25, 1983, 58-48928; Mar. 25, 1983, 58-48929
Int. Cl.[4] C07C 3/26
U.S. Cl. 585—241 17 Claims

1. A method for the thermal decomposition of plastic scraps, comprising the steps of:

melting said plastic scraps by the application of heat so as to obtain a molten plastic mass;

heating said molten plastic mass to a temperature within the range of 440° C. to 470° C. so as to thereby effect the thermal decomposition of said molten plastic mass and obtain a vaporous product;

conducting said vaporous product through a catalyst bed heated to a temperature within the range of 350° C. to 470° C. so as to subject said vaporous product to secondary catalytic decomposition whereby hydrocarbons having a narrow molecular weight distribution emanate from said catalyst bed; and

recovering said hydrocarbons emanating from said catalyst bed.

4,584,422

SELECTIVE ALKYLATION OF XYLENES WITH ETHYLENE

George C. Barile, South Somerville, and Warren W. Kaeding, Westfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 46,394, Jun. 6, 1979, abandoned. This application Jun. 23, 1982, Ser. No. 391,279
Int. Cl.[4] C07C 3/52
U.S. Cl. 585—467 23 Claims

1. A process for alkylation and rearrangement, whereby a mixture of three isomers of dimethylbenzene is alkylated with ethylene to produce dimethylethylbenzene, wherein methyl groups on benzene rings of said dimethylethylbenzene are rearranged such that there is produced a product containing 3,4-dimethyl-1-ethylbenzene in excess of its normal equilibrium concentration, said process comprising contacting said dimethylbenzene mixture with said ethylene under conditions effective for accomplishing said alkylation in the presence of a crystalline zeolite ZSM-5 catalyst, said zeolite having a silica

to alumina ratio of at least about 12, wherein said dimethylethylbenzene contains at least 71.5% of 3,4-dimethyl-1-ethylbenzene.

4,584,423

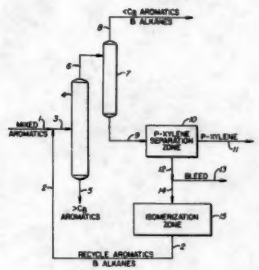
XYLENE ISOMERIZATION USING A ZEOLITE WITH A GROUP II METAL

Gerald J. Nacamuli, Mill Valley, and Donald A. Hickson, Benicia, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 635,676, Jul. 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 533,712, Sep. 19, 1983, abandoned. This application Jul. 9, 1985, Ser. No. 753,294

Int. Cl.[4] C07C 5/22

U.S. Cl. 585—481 9 Claims



1. A process for isomerization of a non-equilibrium mixture of xylenes containing ethylbenzene which comprises:

(a) feeding the mixture of xylenes to a xylene isomerization reaction zone;

(b) contacting the mixture in the reaction zone with a ZSM-5 or ZSM-11 zeolite catalyst containing 0.05 to 1.5 weight percent based on zeolite of zinc, cadmium, iron, barium, tin or cesium metal, thereby isomerizing the xylenes; and

(c) carrying out the xylene isomerization in the absence of added hydrogen, and at vapor phase reaction conditions including a temperature between 500° F. and 900° F. and a pressure between 10 and 100 psig.

4,584,424

PROCESS FOR SEPARATING ETHYLBENZENE FROM XYLENES BY SELECTIVE ADSORPTION ON A BETA ZEOLITE

Denise M. Barthomeuf, Lyon, France, assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Oct. 29, 1984, Ser. No. 666,196

Int. Cl.[4] C10G 25/03; C07C 7/13

U.S. Cl. 585—828 22 Claims

1. a process for the separation of ethylbenzene from a feedstream containing ethylbenzene and at least one xylene isomer comprising the steps of:

(a) contacting the feedstream with a Beta zeolite under conditions suitable for adorbing ethylbenzene by the zeolite;

(b) passing a desorbent selected from the group consisting of monosubstituted benzene wherein said substituent contains a heteroatom selected from the group consisting of O, S, P, and halogens, monoalkylbenzenes having from 3 to 12 carbon atoms in the monoalkyl substituent and paradialkylbenzenes through the zeolite during or after the contacting step, and

(c) recovering a stream enhanced in ethylbenzene concentration from the zeolite.

4,584,425

CYCLOOLEFIN PURIFICATION METHOD AND POLYMERIZATION COMPOSITION

Glenn M. Tom, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 497,918, May 25, 1983, Pat. No. 4,507,453, which is a continuation-in-part of Ser. No. 342,455, Jan. 25, 1982, abandoned. This application Nov. 16, 1984, Ser. No. 672,424

Int. Cl.[4] C07C 7/12

U.S. Cl. 585—827 4 Claims

1. A method of preparation of dicyclopentadiene for rapid polymerization by metathesis catalysis

(a) distilling impure dicyclopentadiene to form distilled dicyclopentadiene,

(b) contacting said distilled dicyclopentadiene and an adsorbant to form purified dicyclopentadiene, said purified dicyclopentadiene being sufficiently reactive to polymerize in about one minute or less in the presence of a metathesis catalyst.

4,584,426

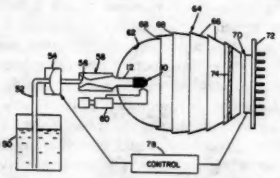
THERMOPHOTOVOLTAIC TECHNOLOGY

Robert E. Nelson, Weston, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 529,016, Sep. 2, 1983, abandoned. This application Jul. 31, 1984, Ser. No. 634,379

Int. Cl.[4] H01L *31/04*

U.S. Cl. 136—253 35 Claims



1. A thermophotovoltaic device comprising a photocell, a rare earth metal oxide radiator disposed in optically coupled relation to said photocell, and means for thermally exciting said radiator to cause it to emit radiation, said radiator, when heated to 1700° C., emitting radiation in a spectral irradiance profile that has a narrow radiated flux peak that is located less than four hundred nanometers below the electron production threshold of said photocell, said flux peak having a full width at half maximum of less than four hundred nanometers and said relative spectral irradiance profile of said radiator also having suppressed skirt characteristics such that, at wavelengths five hundred nanometers above and below said flux peak, the radiated flux levels of said skirts are less than ten percent of the radiated flux at said peak.

4,584,427

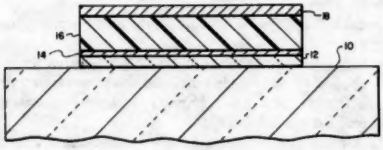
THIN FILM SOLAR CELL WITH FREE TIN ON TIN OXIDE TRANSPARENT CONDUCTOR

Kevin K. Mackamul, Simi Valley; Don L. Morel, Agoura Hills, and David P. Tanner, Thousand Oaks, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 22, 1984, Ser. No. 663,648

Int. Cl.[4] H01L *31/06, 31/18*

U.S. Cl. 136—256 13 Claims



1. A solar cell comprising:

a transparent front face electrode comprising oxides of one or more metals,

a layer of free metal on said front face electrode, said free metal layer comprising at least one of said one or more metals, said layer of free metal being substantially transparent to visible light,

a thin film photovoltaic device on said free metal layer, and

a back face electrode on said photovoltaic device.

4,584,428

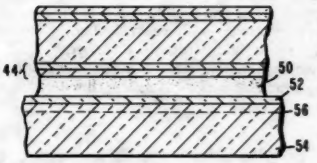
SOLAR ENERGY CONVERTER EMPLOYING A FLUORESCENT WAVELENGTH SHIFTER

George F. J. Garlick, Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 12, 1984, Ser. No. 651,864

Int. Cl.[4] H01L *31/04*

U.S. Cl. 136—257 2 Claims



1. A solar converter comprising:

(a) a zinc selenide fluorescent wavelength shifter including a fluorescent zinc selenide substrate having anti-reflecting coatings on opposite sides thereof and operative to convert predetemined wavelengths of solar radiation to radiation of different wavelengths for transmission to an adjacent solar cell, said fluorescent wavelength shifter having a response spectra extending between about 0.3 and 0.47 micrometers wavelength;

(b) a gallium arsenide or aluminum gallium arsenide solar cell having a pn junction therein and an anti-reflective coating on one surface and further having a response spectra extending from approximately 0.47 micrometers to approximately 0.9 micrometers and operative to convert sunlight radiation of these wavelengths to output power; and

(c) means for adhesively bonding one of said anti-reflectingly coated sides of said fluorescent wavelength shifter to said anti-reflective coating of said solar cell and for simultaneously providing good optical matching and transparency between these anti-reflecting coatings, whereby the pn junction of the solar cell converts radiation wavlengths within the fluoresence spectrum of said wavelength shifter to useful output power and thereby enhances and optimizes the solar conversion efficiency of said solar converter.

4,584,429

ELECTRICAL ASSEMBLY INCLUDING A METAL ENCLOSURE AND A HIGH VOLTAGE BUSHING

Raymond Raketti, Milwaukee; Daniel Schreiber, New Berlin; Andrew J. Orgovan, S. Milwaukee, all of Wis.; George E. Adair, Scarborough, Canada, and Lawrence M. Burrage, S. Milwaukee, Wis., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Mar. 21, 1983, Ser. No. 477,331

Int. Cl.[4] H01B *17/26, 17/44*

U.S. Cl. 174—18 19 Claims

1. A high voltage electrical assembly comprising:

a metal enclosure containing a first dielectric fluid, said enclosure having a top provided with an opening therethrough;

a high voltage bushing extending through said opening in the top of said enclosure;

said bushing including,

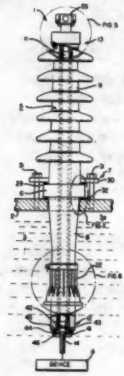
a tubular shell of electrical insulating material having a portion extending above the top of said enclosure and terminating in an outer end, and a portion passing through said opening in the top of said enclosure and terminating in an inner end immersed in said first dielectric fluid, said shell having a portion of its exterior surface coated with a conductive material, with the conductive material extending from the enclosure top to a substantial extent into said first dielectric fluid;

a conductor coaxially maintained within the interior of said shell and spaced therefrom, said conductor extending beyond said inner and outer ends of said shell;

a second dielectric fluid filling a chamber defined by a radial space between said conductor and said shell and an axial space from somewhat below the top of the chamber to its bottom which spaces are not occupied by other components of the bushing;

sealing means disposed near said outer end and near said inner end of said shell to maintain the coaxial mounting of said conductor within said shell and to retain said second dielectric fluid within the chamber;

a tubular insulating member surrounding said conductor for a substantial portion of its length within the chamber; and



a conductive tube in close association with said insulating member for a substantial portion of its length, to establish a floating equipotential surface intermediate between a voltage of said enclosure and a supply voltage to said bushing;

and said assembly further comprising,

a conductive gasket, said gasket resiliently sealing an interface between said enclosure and said shell, and said gasket electrically connecting the conductive material on said shell to the enclosure; and

mounting means cooperating between said shell and said enclosure and compressing said gasket between said shell and said enclosure to maintain a seal between them.

4,584,430

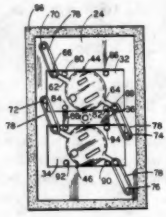
SAFETY ELECTRICAL RECEPTACLE COVER PLATE

Lewis J. Belknap, 7425 Davis Mill Cir., Harrison, Tenn. 37341

Filed Apr. 8, 1985, Ser. No. 720,888

Int. Cl.[4] H02G *3/14*

U.S. Cl. 174—67 **15 Claims**



1. A safety cover plate for an electrical wall receptacle having dual socket elements including slots for receiving the prongs of a plug, said cover plate comprising a base plate having a front face and a rear face, a lip extending rearwardly about the periphery of the plate beyond the rear surface, a pair of recesses formed in the rear face, a circular opening formed in each recess extending through the front face, the openings being spaced apart for overlaying the socket elements of said receptacle, a shutter disposed within each recess having a central portion disposed within the corresponding opening, each shutter including a journal surface for rotatably sliding on the surface of the respective recess, means defining plug receivable slots in each shutter adapted to register with the slots in the socket elements, a pair of arms formed on and extending from each shutter, non-conducting resilient means connected to each arm for rotatably urging the corresponding shutter to a position where the corresponding slots of each shutter are out of registery with the slots of the respective socket elements and for permitting registery of said slots upon overcoming the urging of said resilient means, and resiliently compressible material disposed about said lip and compressible upon attachment of said cover plate to a receptacle for permitting said shutters to be drawn into abutment with the respective socket elements.

4,584,431

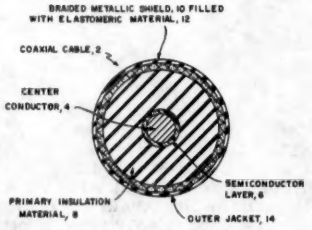
HIGH VOLTAGE RF COAXIAL CABLE

Robert J. Tippie, 375 Fleagle Rd., Glen Burnie, Md. 21061, and Anthony T. Nasuta, Jr., 5 Hollis Ct., Timonium, Md. 21093

Filed Oct. 11, 1984, Ser. No. 659,920

Int. Cl.[4] H01B *11/18*

U.S. Cl. 174—107 **8 Claims**


BRAIDED METALLIC SHIELD, 10 FILLED WITH ELASTOMERIC MATERIAL, 12
COAXIAL CABLE, 2
CENTER CONDUCTOR, 4
SEMICONDUCTOR LAYER, 6
PRIMARY INSULATION MATERIAL, 8
OUTER JACKET, 14

1. A high voltage coaxial cable comprising:

a center conductor;

a layer of semiconductor material surrounding said center conductor;

a primary insulation material surrounding said semiconductor material;

a braided metallic shield surrounding said primary insulation material; and

a room temperature-curable silicone elastomeric material applied to said braided metallic shield and filling the voids at the interface of said primary insulation material and said braided metallic shield.

6. A method of forming a high voltage coaxial cable comprising the steps of:

(a) forming a layer of a semiconductor material over a center conductor;

(b) forming a primary insulation material over said semiconductor material;

(c) braiding a metallic shield over said primary insulation material; and

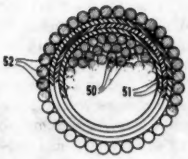
(d) applying a room temperature-curable silicone elastomeric material to said metallic shield with a sufficient pressure to provide a substantially void-free interface of said primary insulation material and said metallic shield.

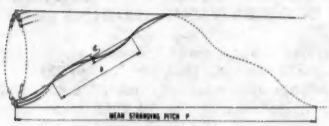
4,584,432

SUBMARINE POWER CABLE CONDUCTOR

Henri Thévenon, Lyons, France, assignor to Les Cables de Lyon, Cedex, France

Filed Jul. 9, 1984, Ser. No. 629,293
Claims priority, application France, Jul. 11, 1983, 83 11523
Int. Cl.[4] H01B 5/08
U.S. Cl. 174—128 R 2 Claims





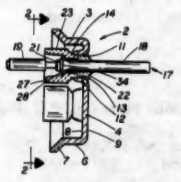
1. A submarine power cable conductor comprising:
at least one central conductor consisting of at least one layer of metal wires stranded helically at mean stranding pitch (P),
insulation surrounding said stranded metal wires, and helically wound armour wires surrounding said insulation,
the improvement wherein all central conductor metal wires are laid in the same direction and at a periodically varied angle a wherein the periodically varied angle generates undulation of all the central conductor wires such that all of the central conductor wires twist about a mean winding helix;
and wherein the varied angle pitch (p) of the undulation is less than twice the mean standing pitch (P);
whereby, when the central conductor is stretched, each wire in the central conductor will follow the elongation thereof through a modification of its geometrical position, bringing it closer to said means winding helix without any elongation of the wire itself, with the central conductor being of a greater length than the armour so that the armour will fulfill its carrier function and all wires of the central conductor are longer than the armour.

4,584,433

HERMETIC TERMINAL ASSEMBLY

Benjamin Bowsky; Glenn A. Honkomp, both of Warren County, and Larry G. Burrows, Hamilton County, all of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 3, 1984, Ser. No. 669,249
Int. Cl.[4] H01B 17/30; H01R 13/74
U.S. Cl. 174—152 GM 6 Claims



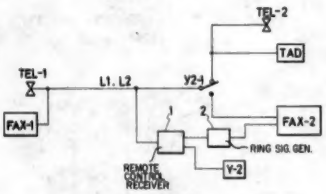
5. A hermetic terminal assembly adapted to be hermetically secured to an opening in a motor unit housing comprising: a cover member having at least one hole therein; a current conducting pin extending through said hole, said pin having an outer end to extend externally of said housing to receive an electrical connection to a current source and an inner end to extend within said housing to receive an electrical connection to a motor disposed in said housing, said inner end of said pin having a flange extending generally radially therefrom, said flange having an inner face facing said inner end of said pin and an opposite face facing said outer end of said pin; a seal bonding said pin to the inside surface defining said cover member hole; and a hollow electrically insulating sleeve surrounding said pin and said flange extending therefrom with the inner axial extremity of said sleeve extending at an axial location relative said pin substantially beyond the axial location of the inner face of said flange and the opposite axial extremity of said sleeve being bonded to said seal to provide an extended tortuous path between said flange on said pin and said cover member to minimize the possibilities of electrical arcing therebetween, the opposite face of said flange being axially spaced from the inner wall of said opposite extremity of said sleeve to accommodate for different coefficients of expansion of differing materials.

4,584,434

ADDITIONAL SYSTEM FOR AUTOMATIC INFORMATION RECEPTION TERMINAL DEVICE UTILIZING TELEPHONE CIRCUIT

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Aug. 31, 1984, Ser. No. 646,431
Claims priority, application Japan, Sep. 2, 1983, 58-161705
Int. Cl.[4] H04M 11/00
U.S. Cl. 179—2 A 9 Claims

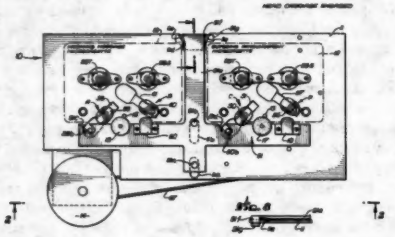


1. An additional system for an automatic information reception terminal device utilizing a telephone circuit, comprising:
an automatic telephone answering apparatus connected in parallel with a telephone set connected to a public telephone circuit;
a remote control circuit, connected to said public telephone circuit, for receiving a remote control signal and generating an output;
ringing signal generating means, operated in response to the output from said remote control circuit, for generating and supplying to said terminal device a signal identical or similar to a telephone ringing signal;
relay means reponsive to the output from said remote control circuit, and for switching an input supplied to said terminal device from said ringing signal generating means to said public telephone circuit and disconnected said automatic telephone answering device from said public telephone circuit; and
means for resetting said relay means.

4,584,435
MINIATURE TELEPHONE ANSWERING DEVICE WITH SINGLE HEAD CARRIAGE

Sava Jacobson, 8130 Orion Ave., Van Nuys, Calif. 91405

Filed Nov. 22, 1983, Ser. No. 554,265
Int. Cl.[4] H04M *1/65;* G11B *21/16*
U.S. Cl. 179—6.03 13 Claims



1. In a telephone answering device utilizing an outgoing announcement tape cassette and an incoming message tape cassette, the improvement comprising:

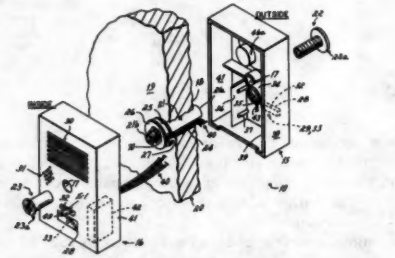
a unitary carriage carrying the heads and pinch rollers for both said outgoing and incoming cassettes, and being selectively movable between an engaged position in which the pinch rollers and heads are in engagement with the respective cassettes, and one or more retracted positions in which the heads and pinch rollers are spaced from said cassettes,

means for selectively controlling the operating mode of both said cassettes in response to the position of said head carriage.

4,584,436
DOOR-MOUNTED COMBINATION INTERCOM AND VIEWER

Charles B. Boenning, and Charles J. Moorman, both of Cincinnati, Ohio, assignors to Claiborne Electronics, Inc., Cincinnati, Ohio

Filed Apr. 27, 1984, Ser. No. 604,477
Int. Cl.[4] H04M *9/00*
U.S. Cl. 179—37 13 Claims



1. An improved combination intercom and viewer system for a door having an aperture therein, comprising:

a pair of housings for engagement with respective sides of a door, each said housing having an aperture therein;

a speaker and a microphone mounted in each said housing;

a viewing tube insertable through said aperture in said door, said tube having opposite ends extending beyond said door sides and extending through said apertures in said housings;

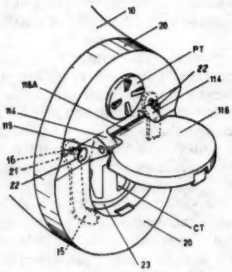
a two-way communication circuit mounted in one of said housings, said microphones and said speakers being selectively electrically connected to said two-way communications circuit, said circuit including first switch means for selectively establishing communication between said microphone in a preselected one of said housings and said speaker in the other of said housings;

vibration damping material for isolating each said microphone from physical contact with its respective housing to prevent acoustic feedback caused by vibration, said two-way communication circuit further including a battery mounted in said same housing, said communication-circuit-containing-housing being an inside housing, the other said housing being an outside housing, first means cooperating with one of said tube ends for securing said outside housing to said door and second means for removably securing said inside housing to another of said tube ends whereby said inside housing is removable for servicing without removing or loosening said outside housing.

4,584,437
HEARING AIDS OF THE TYPE INTENDED TO BE FITTED IN THE EXTERNAL AUDITORY MEATUS OF THE USER

Vittorio Giannetti, Via Deruta 63, Roma, Italy

Filed Jan. 26, 1983, Ser. No. 461,235
Claims priority, application Italy, Jan. 27, 1982, 35564/82[U]; Jan. 27, 1982, 35568/82[U]; Dec. 30, 1982, 36258/82[U]
Int. Cl.[4] H04R *25/02*
U.S. Cl. 179—107 E 2 Claims



1. A hearing aid of the type intended to be completely received in the external auditory meatus of the user and comprising a housing of frustroconical shape having an opening; a closure plate for said opening; a battery seat in said closure plate; a combined battery seat cover and grip means mounted on the outer face of the closure plate so that it is moveable between a closed position and an open and easily gripped position; wherein the cover and grip means covers the battery seat in the closed position, and wherein the cover and grip means extends outward from the closure plate to allow the planar faces of said cover and grip means to be securely gripped between the user's fingertips in the open and easily gripped position, whereby the hearing aid can be positioned and easily removed from the user's ear when the hearing aid is in the open and easily gripped position.

4,584,438
PERCUSSION AIR MOTOR

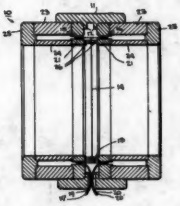
Erl Koenig, Methodist Farm Rd., P.O. Box 559, Averill Park, N.Y. 12018

Continuation of Ser. No. 165,962, Jul. 7, 1980, abandoned. This application Aug. 18, 1983, Ser. No. 524,195
Int. Cl.[4] H04R *9/02, 9/04*
U.S. Cl. 179—115.5 DV 13 Claims

1. a transducer comprising

a sleeve;

a diaphragm secured to and within said sleeve in a central plane thereof; and



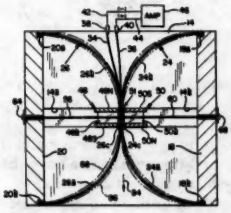
electromagnetic means disposed in mirror image symmetric relation to said sleeve for reciprocating said sleeve and diaphragm in a linear manner to produce a balanced distortion free sound.

4,584,439

AUDIO TRANSDUCER WITH CONTROLLED FLEXIBILITY DIAPHRAGM

Paul W. Paddock, McMinnville, Oreg., assignor to Floating Membranes, Inc., Portland, Oreg.

Filed Dec. 1, 1983, Ser. No. 556,776
Int. Cl.⁴ H04R 9/06
U.S. Cl. 179—115.5 PV **8 Claims**



1. An audio transducer and amplifier assembly which comprises

a frame,

a diaphragm comprising a pair of elongate resilient webs having intermediate portions disposed with one beside the other and joined to each other which form a movable expanse in the diaphragm and said expanse extending substantially in a plane, said expanse being movable in the direction of said plane, said webs in said diaphragm having flexible curved end portions extending from said expanse which are secured at locations remote from said expanse to said frame,

coil means attached to said expanse of the diaphragm,

opposing magnetic field means for producing opposing magnetic fields, extending normal said expanse, and

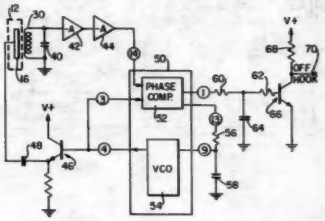
an audio amplifier and means connecting said coil means to said amplifier for conducting electrical impulses between said coil means and said amplifier.

4,584,440

TELEPHONE DISCONNECT APPARATUS

Alexander A. Wenger, Melville, N.Y., assignor to Eagle Telephonics, Inc., Plainview, N.Y.

Filed Aug. 12, 1983, Ser. No. 522,945
Int. Cl.⁴ H04M 1/06
U.S. Cl. 179—159 **13 Claims**



1. A disconnect apparatus for use with a telephone including a handset having an earpiece and a base adapted to receive the handset in an on-hook condition, said apparatus comprising:

a controllable oscillator having a control terminal and providing an output signal, the frequency of which can be controlled by means of a signal applied to said control terminal;

means coupling said oscillator output signal to said earpiece;

comparator means jointly responsive to the output signal of said oscillator and a second input signal for producing an output signal assuming different conditions when said oscillator output and second input signals are alike and unalike, said output signal being electrically coupled to said oscillator control terminal and also being indicative of an on-hook condition; and

pickup means mounted to be in close proximity to said earpiece when said handset is in its on-hook position for providing a transmission path for oscillator output signals coupled to said earpiece, said pickup means being electrically coupled to said comparator means to provide the second input signal thereto.

4,584,441

BIDIRECTIONAL ADAPTIVE VOICE FREQUENCY REPEATER

Christopher P. Chance, Winston-Salem; Ralph P. Coble, Jr., Greensboro; Edwin C. Ingle, Jamestown, and Joye A. Jones, Greensboro, all of N.C., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 7, 1984, Ser. No. 648,326
Int. Cl.⁴ H04B 3/20
U.S. Cl. 179—170.2 **12 Claims**

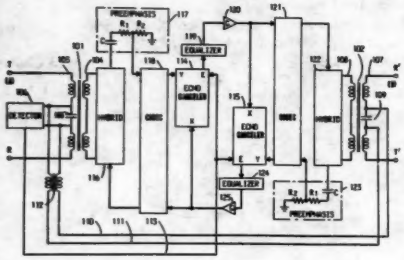
1. A signal transmission network including:

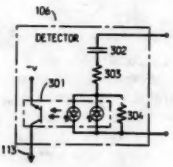
at least first means adapted to connect said transmission network to at least a first bidirectional transmission facility;

at least first echo canceler means for cancelling echo signals resulting in said transmission network because of said first bidirectional transmission facility, said echo canceler means including signal processor means adapted to be supplied with an input signal and being responsive to an error signal for generating an estimate of an echo signal to be cancelled by adjusting an impulse response characteristic, means responsive to a control signal for inhibiting adjusting said impulse response characteristic and means for algebraically combining said echo signal estimate with an outgoing signal to generate said error signal; and

amplitude detecting means including an optical isolator responsive to signal incoming to said transmission network from said first bidirectional transmission facility for detecting large incoming signals having an amplitude

equal to or greater than a predetermined threshold value and for generating said control signal to inhibit adjusting





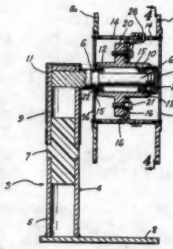
of said impulse response characteristic of said at least first echo canceler means during intervals that said large signals are detected incoming to said transmission network.

4,584,442

WELDING CABLE REEL SYSTEM

David A. Shields, 24709 Ebelden Ave., Newhall, Calif. 91321, and James R. Davis, 8824 Cache St., Leona Valley, Calif. 93550

Filed Oct. 11, 1983, Ser. No. 540,789
Int. Cl.[4] H02G *11/02*; H01B *17/14*
U.S. Cl. 191—12.2 R **9 Claims**



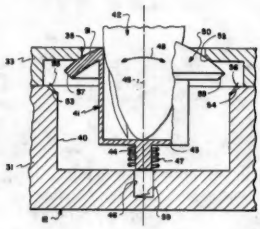
1. A welding cable reel system comprising:
a reel;
an electrically conductive hub and bearing assembly;
an electrically conductive hub shaft; and
a support post assembly wherein the reel is connected to the electrically conductive hub and bearing assembly, said hub and bearing assembly being mounted on said electrically conductive hub shaft which is connected to the upper portion of the support post assembly and extends horizontally outward from the support post assembly such that the combined reel and hub and bearing assembly may be rotated about the shaft wherein the electrically conductive hub and bearing assembly is comprised of a hollow metal cylindrical hub having flange extending radially outwardly from the exterior wall of the hub, said flange having a plurality of equally spaced threaded mounting apertures passing through the body of the flange and a pair of electrically conductive roller-type bearings wherein the electrically conductive roller-type bearings are seated within the hollow center portion of the cylindrical hub, one bearing being located near each end of the hub.

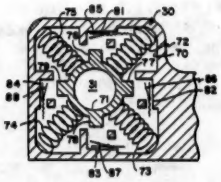
4,584,443

CAPTIVE DIGIT INPUT DEVICE

Bernard W. Yaeger, Los Angeles, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 610,060, May 14, 1984, abandoned. This application May 31, 1985, Ser. No. 739,787
Int. Cl.[4] B41J *5/10, 7/00*; G06C *7/00*; H01H *25/00*
U.S. Cl. 200—6 A **8 Claims**





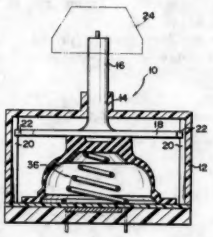
1. In a manual digit data input device, in combination:
a cup, having an axis, configured to captivate the distal phalanx of a manual digit;
a housing comprising a body having a cavity in which said cup is resiliently mounted and a cover having an aperture giving digital axis to said cup;
means resiliently mounting said cup in said housing for axial and mutually orthogonal transverse movements of said cups, said cup having a protruding rim and said cover having a recess engageable by said rim during transverse movements of said cup;
and electrical output devices actuated in response to movement of said cup.

6. In a manual digit data input device, in combination:
a cup, having an axis, configured to captivate the distal phalanx of a manual digit;
a housing;
means resiliently mounting said cup in said housing for mutually orthogonal transverse movement of said cup;
and switch means actuated in response to movement of said cup;
said cup having a closed bottom with a peg projecting outwardly therefrom;
and said housing an aperture coaxial with said peg, so that upon axial movement of said cup, said peg enters said aperture and prevents movement of said cup transverse to said axis.

4,584,444
KEYBOARD SWITCH

Takao Nagashima, Tokyo, Japan, assignor to Topre Corporation, Tokyo, Japan

Filed Sep. 21, 1984, Ser. No. 652,738
Int. Cl.[4] H01G 5/01; H01H 9/00
U.S. Cl. 200—52 R 16 Claims



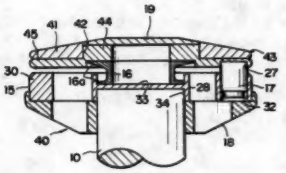
1. A keyboard switch comprising:
an insulating substrate;
a first electrode laid on the insulating substrate;
a second electrode facing the first electrode;
a dielectric positioned between the first and second electrodes,
said second electrode being formed of a conical coil spring, and being positioned on the dielectric such that one end portion of the spring may be contacted with the surface of the dielectric, capacitance between the first and second electrodes being mainly defined by the contact area between the dielectric and second electrode;
a button, positioned on the other end portion of the second electrode, for compressing the second electrode toward the first electrode to change the contact area when the button depressed toward the first electrode, said capacitance varying with the change in the facing area which changes substantially in proportion to the depth of depression of the button;
means for restoring said button to an undepressed position, said means for restoring comprising said second electrode; and
means for giving snap feeling to an operator when the button is depressed sufficiently that the capacitance exceeds a given value sufficient to activate said switch,
whereby the switch is capacitive-coupled for switching operation and the feeling is given to the operator when the capacitance exceeds the given value.

9. A keyboard switch comprising:
an insulating substrate;
a first electrode having one side and fixed on the insulating substrate;
a second electrode having one side and fixed on the same plane with the first electrode on the insulating substrate, said one sides of the first and second electrodes facing each other;
an auxiliary electrode formed of a conical coil spring, one end portion of the auxiliary electrode being mounted on the first and second electrodes;
a dielectric positioned between the first and second electrodes and the auxiliary electrode, the capacitance of the keyboard switch being mainly defined by contact area between the dielectric and auxiliary electrode;
a button, positioned on the other end portion of the auxiliary electrode, for compressing the auxiliary electrode toward the insulating substrate to change the contact area when the button is depressed toward the insulating substrate, said capacitance varying with the change in the facing area which changes substantially in proportion to the depth of depression of the button;
means for restoring said button to an undepressed position, said means for restoring comprising said auxiliary electrode; and
means for giving snap feeling to an operator when the button is depressed sufficiently that the capacitance exceeds a given value sufficient to activate said switch
whereby the switch is capacitive-coupled for a switching operation and the snap feeling is given to the operator when the capacitance exceeds the given value.

4,584,445
VACUUM INTERRUPTER

Yoshiyuki Kashiwagi; Yasushi Noda, and Kaoru Kitakizaki, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Mar. 14, 1984, Ser. No. 589,295
Claims priority, application Japan, Mar. 15, 1983, 58-43991; Aug. 30, 1983, 58-159206; Aug. 30, 1983, 58-159207; Sep. 30, 1983, 58-183647; Sep. 30, 1983, 58-183649; Sep. 30, 1983, 58-183650; Oct. 3, 1983, 58-184902
Int. Cl.[4] H01H 33/66
U.S. Cl. 200—144 B 19 Claims

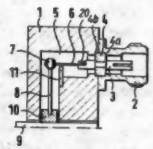


1. A vacuum interrupter comprising a pair of separable contact-electrodes (13, 24), each of which consists of a disc-shaped arc-diffusing portion (20) and a contact-making portion (19) projecting from a central portion of an arcing surface of the arc-diffusing portion (20), a vacuum envelope (4) which is electrically insulating and enclosing the contact-electrodes (13, 24), and means for applying a magnetic field (14, 30) in parallel to an arc established between the contact-electrodes (13, 24) when said contact-electrodes are separated, wherein said arc-diffusing portion (20) of at least one (13) of the contact-electrodes (13, 24) is made of material of 2 to 30% IACS electrical conductivity and said contact-making portion (19) of said at least one contact-electrode (13) is made of material of 20 to 60% IACS electrical conductivity.

4,584,446
RADIO FREQUENCY COAXIAL SWITCH

Georg Spinner, Am Eichberg 12, D-8152 Feldkirchen-Westerham 1, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,776
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330876
Int. Cl.[4] H01H 19/10
U.S. Cl. 200—153 S 14 Claims



1. A coaxial switch, comprising:
a casing accommodating a chamber;
a movable contact member arranged in said chamber;
at least one stationary contact roll cooperating with said movable contact member;

a leaf spring having one end portion supporting said contact roll and prestressing the latter toward said movable contact member; and

connecting means for positioning said contact roll on said end portion of said leaf spring.

4,584,447

ELECTROMAGNETIC WAVE ENERGY SEAL ARRANGEMENT

Shigeru Kusunoki; Tomotaka Nobue, and Takashi Kashimoto, all of Yamatokoriyama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

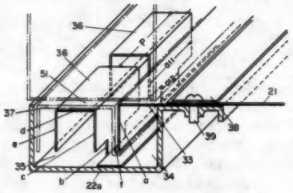
PCT No. PCT/JP83/00269, § 371 Date Mar. 26, 1984, § 102(e) Date Mar. 26, 1984, PCT Pub. No. WO84/01083, PCT Pub. Date Mar. 15, 1984

PCT Filed Aug. 18, 1983, Ser. No. 599,434

Claims priority, application Japan, Aug. 25, 1982, 57-148002; Aug. 25, 1982, 57-148003; Aug. 25, 1982, 57-148004; Aug. 25, 1982, 57-148005

Int. Cl.[4] H05R *6/76*

U.S. Cl. 219—10.55 D **9 Claims**



1. An electromagnetic wave energy seal arrangement comprising:

at least a pair of members separably fitted together and defining at least one electromagnetic active space for confining electromagnetic waves from a high frequency oscillation source, said pair of members having opposed portions defining a leakage path for electromagnetic waves from said space to the exterior around said space, at least one of said members having at least one groove in the portion defining said leakage path with the depth thereof for attenuating the electromagnetic waves of basic frequency extending perpendicular to the direction of said leakage path, and the groove extending along said one member transverse to the direction of the leakage path; and

a plurality of conductor plates extending along the groove on at least one surface of the portion of said one member defining said leakage path and groove, said conductor plates extending from the bottom of said one groove remote from the other member toward said other member, the width of the groove being less than ¼ the effective wavelength of the electromagnetic waves of basic frequency, at least one parameter from among the width of said conductor plates, the clearance between said conductor plates and the surface of the groove opposed to said conductor plates, and the dielectric constant of any dielectric in said groove, is different at the outer portion of the groove adjacent the leakage path than at the inner portion, and wherein the depth of said groove is less than ¼ of the effective wavelength of the electromagnetic waves in said leakage path and the sum of the depth of said groove and the width thereof is also less than ¼ the effective wavelength of the electromagnetic waves in said leakage path.

4,584,448

MICROWAVE HEATING APPLIANCE WITH SIMPLIFIED USER'S OPERATION

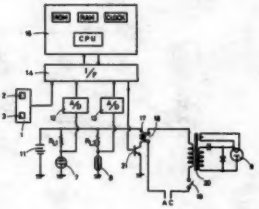
Takeshi Tanabe, Higashiosaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 393,611, Jun. 30, 1982, abandoned. This application Dec. 4, 1984, Ser. No. 676,617

Claims priority, application Japan, Jul. 6, 1981, 56-106145; Jul. 6, 1981, 56-106146

Int. Cl.[4] H05B *6/64*

U.S. Cl. 219—10.55 B **5 Claims**



1. A microwave heating system comprising:

a heating chamber in which a foodstuff may be placed for cooking;

microwave cooking means for applying microwave energy to the interior of said heating chamber to cook said foodstuff;

gas sensor means disposed for monitoring gas in said chamber and producing a gas signal indicative thereof;

means for monitoring the timewise variation of said gas signal from sampled values of said gas signal at different sample times and for determining the desired final level of said gas signal from said timewise variation, said desired final level of said gas signal being different from said sampled levels, said means for monitoring developing a first signal when said desired final level of said gas signal is achieved;

control means for enabling said microwave cooking means, said control means disabling said microwave cooking means upon receipt of said first signal.

4,584,449

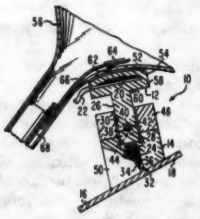
GETTER FLASHER HAVING A SELF-CENTERING COIL ENCLOSURE

William J. Timmons, Wabash County, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 28, 1985, Ser. No. 706,459

Int. Cl.[4] H05B *6/40*

U.S. Cl. 219—10.57 **12 Claims**



1. In a getter flasher having a coil enclosure supported by a holder, said coil enclosure including an induction heating coil oriented substantially parallel to a given plane and adapted to heat a getter container disposed within a cathode-ray tube and

adjacent to a funnellike surface thereof, the improvement comprising:

resilient means coupled to said coil enclosure for moving said coil enclosure with respect to said holder, and

a surface of said coil enclosure having a contour substantially similar to a portion of said funnellike surface of said tube, said coil being positioned within said coil enclosure such that said plane is substantially parallel to the getter container when said contoured surface is placed conformably adjacent said funnellike surface portion.

4,584,450

METHOD OF PREPARING A MACHINING FLUID FOR ELECTROEROSION

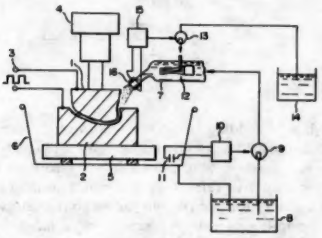
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohamashi, Japan

Division of Ser. No. 963,286, Nov. 24, 1978, abandoned. This application Oct. 11, 1983, Ser. No. 540,700

Claims priority, application Japan, Nov. 28, 1977, 52-142504; Nov. 29, 1977, 52-143559; Dec. 1, 1977, 52-144734

Int. Cl.⁴ B23H *1/08, 1/10*

U.S. Cl. 219—69 M **12 Claims**



1. A method of carrying out electrical discharge machining (EDM) on a conductive workpiece, comprising the steps of:

(a) spacedly juxtaposing an EDM tool electrode with the workpiece to define between them an EDM gap flushed with an EDM medium;

(b) drawing from a supply thereof a raw water containing chlorine;

(c) deionizing said raw water containing chlorine until its resistivity increases to at least 10^5 ohm-cm and its chlorine content is reduced to at most 1 ppm and thereafter decreasing the resistivity of the deionized raw water by adding thereto a conductivity modifier substantially free from chlorine ions in an amount sufficient to impart to the resulting fluid a predetermined conductivity which in terms of resistivity ranges between 10^3 and 10^4 ohm-cm;

(d) passing said fluid in a dynamic flow as said EDM medium into and through said EDM gap while effecting a succession of machining electrical discharges between the electrode and the workpiece across the gap to remove stock from the workpiece; and

(e) relatively displacing the EDM electrode and the workpiece so that the electrode effectively moves in the workpiece to advance stock removal therein.

4,584,451

WIRE EDM WITH GUIDE MEMBER CHANGER

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Apr. 23, 1984, Ser. No. 603,121

Claims priority, application Japan, Apr. 22, 1983, 58-70105; Mar. 30, 1984, 59-61215; Apr. 6, 1984, 59-67351

Int. Cl.⁴ B23H *7/10*

U.S. Cl. 219—69 W **10 Claims**

1. A machining center, comprising:

an electroerosion machine including

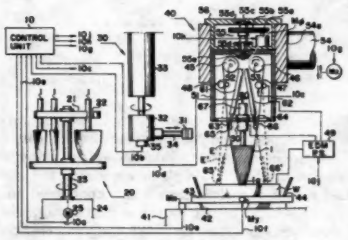
first means for accepting an electrode storage means for supplying a thin, continuous electrode element,

second means for transporting the continuous electrode element supplied from the storage means into takeup means though an electroerosive machining zone to continuously renew an active, eroding surface of the electrode element traveling through the machining zone, and

guide retention means for accepting and holding electrode guide means for imparting to a span of said active electrode surface a predetermined geometry in said cutting zone;

electrode handling means forming a part of said electroerosion machine for unloading the continuous electrode element from said electrode guide means held by said guide retention means;

a guide storage station for storing a plurality of electrode guide elements adapted to constitute said electrode guide



means in a selected number of different forms for imparting to said span corresponding different geometries in said cutting zone; and

guide transfer means operatively associated between said guide storage station and said machine for transferring from said guide retention means at least a portion of said electrode guide means to said guide storage station to replace therefor at least one preselected guide element in said guide storage station and thereafter for transferring the replaced at least one guide element and securing it to said guide retention means to constitute a varied form of said electrode guide means to permit said electrode element to be loaded thereon by said electrode handling means to establish a correspondingly varied geometry of said span of the traveling active electrode surface in the cutting zone in said electroerosion machine, said first means, second means and guide retention means remaining part of and located in said machine during operation of said guide transfer means.

4,584,452

REMOTELY ACTUATED METAL DISINTEGRATION MACHINING APPARATUS

Paolo R. Zafred, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 3, 1983, Ser. No. 548,549

Int. Cl.⁴ B23H *7/30;* B23K *9/28*

U.S. Cl. 219—69 V **33 Claims**

1. A metal disintegration apparatus for performing work on a portion of a workpiece in a confined remote location comprising:

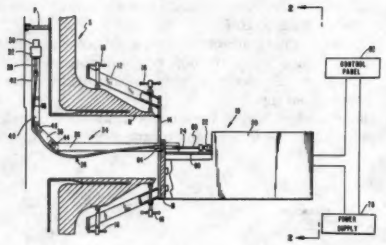
electrode means for disintegrating a portion of a workpiece upon operative engagement therewith;

electrode holder means for movably holding said electrode means relative to said portion of said workpiece;

positioning and supporting means secured on one end thereof to said electrode holder means, said supporting and positioning means being arrangable in a plurality of predetermined configurations for positioning said electrode holder means in a stationary selectable position and

for supporting said electrode holder means at a confined remote location adjacent said workpiece, the other end of said positioning and supporting means being secured to a supporting surface remote to said electrode means;

vibration feed means arranged adjacent said supporting surface and having a mechanical output for vibrating at selected frequencies and for advancing selected distances, said vibration feed means being positioned remote to said electrode means; and



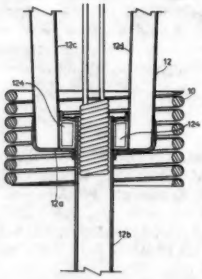
actuator cable means for coupling said mechanical output to said electrode means, said actuator cable means extending through said electrode holder means and being secured on one end thereof to said electrode means, the other end of said actuator cable means being connected to said mechanical output of said vibration feed means, said actuator cable means vibrating and advancing said electrode means while said electrode holder means remains stationary at said selectable position secured on one end of said positioning and supporting means at said confined remote location adjacent said workpiece.

4,584,453

METHOD AND AN APPARATUS FOR INDUCTIVELY WELDING A FRONT FORK OF BICYCLE

Long C. Fu, No. 30-1, Kuang Ming Rd., Wu Jih Hsiang, Tai Chung Hsien, Taiwan

Filed Feb. 6, 1985, Ser. No. 698,867
Int. Cl.[4] H05B *6/44*
U.S. Cl. 219—10.43 **21 Claims**



1. A method for welding the joint of the front fork of a bicycle, which includes a hollow crossbar at the joint, said crosspiece having a central bore, two end openings thereon and a weld metal therein, a hollow handlebar stem having its one end loosely fitted in said bore, and two fork blades each having one end in said openings respectively, comprising the steps of:

(1) applying a main high-frequency heating means to said joint from the outer surface of said crosspiece; and

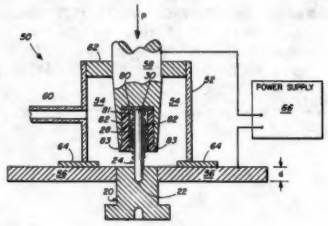
(2) applying an auxiliary high-frequency heating means to said joint from the inner surface of said handlebar stem whereby said auxiliary and said main induction welding heating means cooperates to provide symmetrical heating of the joint thereby preventing overflow defects in the weld.

4,584,454

METHOD OF WELDING A LAMP FEEDTHROUGH ASSEMBLY; AND APPARATUS THEREFOR

Alfred E. Feuersanger, Framingham, and James P. Drummey, Jr., Norwood, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 27, 1984, Ser. No. 604,562
Int. Cl.[4] B23K *11/32*
U.S. Cl. 219—118 **9 Claims**



1. A method of welding an electric feedthrough assembly for an electric lamp, said assembly comprising a plug and a wire pin, said plug and said wire pin each being formed from an electrically conductive refractory material, said plug having a body with a cavity formed therein for receiving said wire pin, said body being bounded by a plurality of surfaces, said wire pin having first and second ends, said method comprising the steps of:

(a) inserting said first end of said wire pin into said cavity so that a joint is formed;

(b) surrounding said joint with a flowing insert gas atmosphere;

(c) applying force such that said wire pin makes intimate contact with a first surface of said plug within said cavity; and

(d) applying a pulse of electrical current through said wire pin and said plug such that a permanent bond is formed between said wire pin and said first surface of said plug within said cavity.

6. An apparatus for electric-current welding of an electric feedthrough assembly for an electric lamp, said assembly comprising a plug and a wire pin, said plug and said wire pin each being formed from an electrically conductive refractory material, said plug having a body with a cavity formed therein for receiving said wire pin, said body being bounded by a plurality of surfaces, said appartus comprising:

(a) an outer wall partially enclosing a gas chamber;

(b) means for mounting said plug such that said cavity is exposed to said gas chamber:

(c) a first electrode protruding into said gas chamber, said first electrode naking contact with said plug;

(d) a second electrode protruding into said gas chamber, said second electrode making contact with said wire pin;

(e) means for substantially closing said gas chamber;

(f) means for purging said gas chamber of the ambient atmosphere and means for filling said gas chamber with a flowing inert gas atmosphere;

(g) means for applying force such that intimate contact between said wire pin and a first surface of said plug within said cavity is attained. said wire pin having an insertion depth in said cavity when said intimate contact has been attained; and

(h) means for applying an electrical pulse through said first

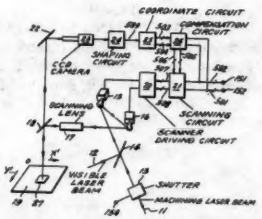
and second electrodes, said wire pin, and said plug such that a permanent bond is formed between said wire pin and said first surface of said plug within said cavity.

4,584,455

LASER BEAM MACHINING APPARATUS

Yukio Tomizawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 18, 1983, Ser. No. 524,147
Claims priority, application Japan, Aug. 20, 1982, 57-144322
Int. Cl.[4] B23K *26/04*
U.S. Cl. 219—121 LH 8 Claims



1. A laser beam machining apparatus, comprising:

a first laser for generating a first laser beam used for machining a workpiece;

a second laser for generating a second laser beam used to detect the position of said workpiece;

means for optically coupling said first and second laser beams such that their optical axes are coincident with each other;

optical scanner means for deflecting said coincident laser beams received from said coupling means and for scanning, along two dimensions, at least a portion of the surface of a workpiece supporting table with said deflected beams;

a scanner circuit responsive to input machining data for producing scan signals for said optical scanner means;

a scanner driving circuit responsive to said scan signals for driving said optical scanner means;

a pick-up camera, so positioned that its viewing field covers a specified area on said workpiece supporting table which area encompasses the area being scanned by said coincident laser beams, said pick-up camera scanning said area and producing video signals indicative of an image of said specified area and therefore including video information representative of the position of said second laser beam on said specified area;

wave form shaping means for converting said video signals into sliced signals;

coordinate signal generating means for generating, as a function of said sliced signals, coordinate signals indicating the location of said second laser beam on said specified area; and

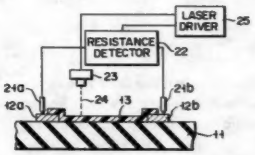
compensation signal generating means for generating, from said coordinate signal and said input machining data, compensation signals indicative of the drift of said optical scanner means, said scanning circuit achieving compensation for the drive in response to said compensation signals.

4,584,456

PRODUCTION OF RESISTOR FROM INSULATING MATERIAL BY LOCAL HEATING

Hirosi Oodaira, Chigasaki; Haruko Suzuki; Masayuki Saito, both of Yokohama, and Nobuo Iwase, Kamakura, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 7, 1983, Ser. No. 530,107
Claims priority, application Japan, Sep. 8, 1982, 57-155187; May 26, 1983, 58-92675; May 26, 1983, 58-92677
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 LM 21 Claims



1. A method for producing a resistor having a predetermined resistance, comprising:

(a) providing a substrate, at least a surface layer portion of which is made of an insulating material which can be converted into a resistor material upon being heated, first and second conductor layers bewng formed which are in contact with said surface layer portion of said substrate so as to have a distance therebetween;

(b) locally heating said surface layer portion of said substrate between said first and second conductors to convert the insulating material at said heated portion into said resistor material, thereby forming at least one first resistor element comprising said resistor material, said at least one first resistor element having two ends contacted with said first and second conductor layers; and

(c) while measuring a resistance between said first and second conductor layers, locally heating said surface layer portion of said substrate between said first and second conductor layers to convert the insulating material at said heated portion into said resistor material, thereby forming at least one second resistor element comprising said resistor material and contacting said at least one first resistor element, until a second-stage resistor comprising said at least one first resistor element and at least one second resistor element and having said predetermined resistance is produced and wherein said second linear resistor element crosses said first linear resistor element at at least one point.

4,584,457

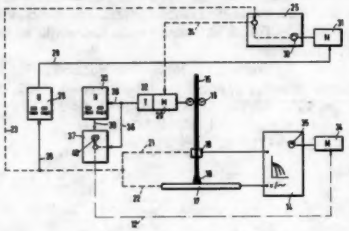
DEVICE FOR ARC WELDING, IN PARTICULAR SUBMERGED-ARC WELDING, WITH ONE OR SEVERAL FUSIBLE ELECTRODES

Ulrich Dilthey, Eching; Ulrich Plantikow, Düsseldorf, and Walter Kopp, Unterschleissheim, all of Fed. Rep. of Germany, assignors to Thyssen AG, vorm August Thyssen-Hutte, Duisburg, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,416
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3322215
Int. Cl.[4] B23K *9/10*
U.S. Cl. 219—130.21 4 Claims

1. A device for arc welding and in particular submerged-arc welding comprising: feed means for supplying at least one fusible electrode at a feed rate; means for applying an alternating current with a falling characteristic to the fusible electrode to produce an arc having an arc length and arc voltage; first regulating means responsive to the value of the arc voltage for controlling the feed means to regulate the feed rate to maintain

a constant arc length; and second regulating means responsive to the feed rate for controlling the current applying means to



increase the current when the feed rate is lower than a given value and decrease the current when the feed rate is greater than a given value to maintain a constant deposition efficiency.

4,584,458

WELDING WIRE FEEDER SYSTEM FOR ELECTRIC ARC WELDING APPARATUS

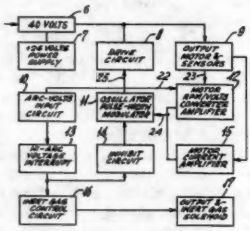
Joseph A. Tremblay, St. Alma, and Lionel E. Talbot, Ville de la Baie, both of Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Aug. 24, 1984, Ser. No. 643,960

Claims priority, application United Kingdom, Aug. 26, 1983, 8323036

Int. Cl.⁴ B23K *9/12*

U.S. Cl. 219—137.71 **10 Claims**



1. A welding wire feeder system for an electric arc welding apparatus, said system comprising means including a feed motor for feeding a welding wire electrode towards a workpiece, means for generating a feedback signal indicative of the speed of rotation of the feed motor, means for generating a control signal indicative of the instantaneous arc voltage at the tip of the welding wire, means for combining said control signal and said feedback signal to generate an error signal, a pulse width modulated power supply for supplying power from a power source to said feed motor, said power supply being operable to supply to the feed motor a pulse voltage whose mark/space ratio is controlled by said error signal, and means for controlling said power supply in response to said error signal in such a way that an increase in welding arc voltage causes a corresponding increase in the welding wire feed rate, and vice versa, said means for combining the control signal and the feedback signal being operable to compare a parameter of the two signals to generate an error signal having one of two distinct values representative, respectively, of the chosen parameter of the control signal being above or below the corresponding parameter of the feedback signal.

4,584,459

SPRAY TRANSFER SELF-SHIELDED TUBULAR COMPOSITE HARD SURFACING ELECTRODE

Stanley J. Merrick, and Robert F. Miller, both of York County, Pa., assignors to Teledyne Industries, Inc., York, Pa.

Filed Feb. 8, 1985, Ser. No. 699,946

Int. Cl.⁴ B23K *35/22*

U.S. Cl. 219—146.1 **8 Claims**

1. A self-shielded tubular composite arc welding electrode comprising a metallic outer sheath and a core within and enclosed by said sheath, the sheath and core together being balanced to produce a hard surfacing weld deposit and containing at least about 2.5 percent chromium by weight of the electrode, the core comprising an alloyed form of at least one of the metals magnesium, calcium, strontium and barium in percentages by weight of the electrode satisfying the following relationship:

$$\frac{\%\ Mg}{0.61} + \%\ Ca + \frac{\%\ Sr}{2.18} + \frac{\%\ Ba}{3.43} = 1 \text{ to } 3.$$

4,584,460

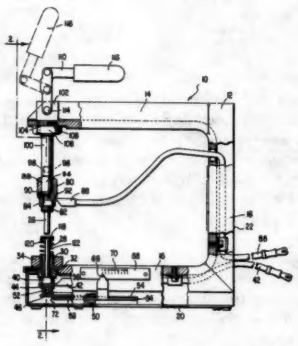
FUSED EYELETTING MACHINE

Bobby L. Mason, Alexandria, Va., and Hubert E. Bush, Sykesville, Md., assignors to Pace Incorporated, Laurel, Md.

Filed Feb. 24, 1984, Ser. No. 583,219

Int. Cl.⁴ H05B *1/00*

U.S. Cl. 219—150 V **8 Claims**



1. A portable machine for setting eyelets and the like comprising:

(a) a C-shaped frame adapted to rest on a work surface, said C-shaped frame having a lower arm and an upper arm,

(b) a lower tool resiliently mounted in an aperture in the lower arm of the frame, said lower tool movable relative to said lower arm,

(c) an upper tool opposing said lower tool, said upper tool movably mounted on the upper arm of the frame, said upper tool having a tool mount for said upper tool including an aperture in said upper arm and a mandrel extending therethrough, said upper tool being secured to said mandrel forming a linear extension thereof,

(d) toggle means pivotably mounted on said upper arm of said C-shaped frame and the uppermost portion of said mandrel for moving said mandrel and upper tool into setting engagement with said lower tool, and

(e) tool support structure underlying and resiliently supporting said lower tool from beneath the aperture in said lower arm, said tool support structure comprising

elongated biasing means, having a longitudinal axis, mounted on said lower arm for exerting an upward force on said lower tool, said biasing means comprising a first

longitudinal portion fixedly connected to said lower arm and a second longitudinal portion bendably movable relative to said lower arm,

a pressure control means movably mounted on said lower arm for predetermining a maximum setting pressure applied to a workpiece by said opposed upper and lower tools, said pressure control means being movable in a direction parallel to said longitudinal axis of said biasing means, said pressure control means having a fulcrum edge movable relative to said second longitudinal portion of said biasing means, said second longitudinal portion of said biasing means abutting against said fulcrum edge to provide said predetermined setting pressure, and

pressure indicating means connected to said pressure control means for indicating said predetermined maximum setting pressure.

4,584,461

PLANAR HEATER FOR LIQUID CRYSTAL ELEMENT

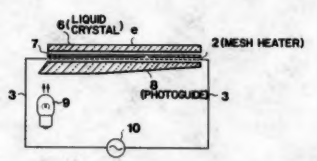
Toru Teshima, Yokohama; Kazuo Ariga, Tokyo, and Mitsunari Yoshida, Yokohama, all of Japan, assignors to Stanley Electric Company, Ltd., Tokyo, Japan

Filed Jan. 19, 1983, Ser. No. 459,239

Claims priority, application Japan, Jan. 22, 1982, 57-8490

Int. Cl.⁴ H05B *1/00*

U.S. Cl. 219—209 **2 Claims**



1. A planar heater directly affixed to one major surface of a liquid crystal element characterized in that a very thin highly flexible metal plate having a relatively high specific resistance is subjected to etching-working to form a mesh-like heat generating body, opposite ends of which are provided with terminal portions for connection into an electrical circuit;

said mesh-like heat generating body and a permeable reflecting plate being laminated together by an ultraviolet hardening type adhesive to provide an integral configuration which is positioned adjacent said liquid crystal element.

4,584,462

HAIRSETTER FOR ELECTRICALLY HEATING FLEXIBLE HAIR CURLERS

Herbert M. Morrison, Trumbull, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed Nov. 14, 1984, Ser. No. 671,343

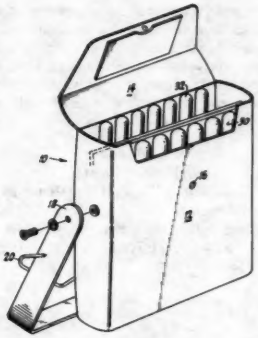
Int. Cl.⁴ A45D *2/18, 4/12;* H05B *3/00*

U.S. Cl. 219—222 **2 Claims**

1. An apparatus for heating a plurality of heatable hair curlers comprising:

a hollow container for receiving a plurality of curlers therein in a substantially longitudinal unbent position, said container having a thermally insulated external surface;

a heat sink core portion within said container for receiving the plurality of curlers adjacent thereto, said core portion having thermally conductive, flat front and back faces each provided with a plurality of parallel, longitudinal channels, each channel adapted to contact a portion of a respective one of the curlers received within said container;



a flat heat source centrally mounted between said front and back faces in heat exchange relationship therewith for heating said faces; and

means for communicating energy to said heat source.

4,584,463

ELECTRIC CONTINUOUS FLOW HEATER

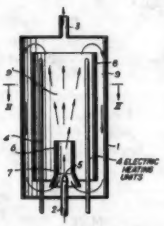
Horst Klages, Holzminden; Hartmut Bonatz, Eschershausen; Ernst Appun; Klaus-Dieter Wahnschaffe, both of Holzminden; Baldur Friedrich, Bevern, and Karl H. Jakal, Höxter-Stahle, all of Fed. Rep. of Germany, assignors to Stiebel Eltron GmbH & Co. KG, Holzminden, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,106

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1982, 3235636; Jun. 27, 1983, 3323058

Int. Cl.⁴ H05B *1/02, 3/82;* F24H *1/10*

U.S. Cl. 219—306 **7 Claims**



1. A continuous-flow water heater, including:

an elongated closed tank having sidewalls and end closures, said tank being arranged with its longitudinal axis substantially vertical;

substantially vertical baffle means positioned within said tank;

means supporting said baffle means spaced from a vertical wall of said tank, and with respective upper and lower ends of said baffle spaced from top and bottom end closures of said tank and forming a pair of compartments communicating at their top and bottom;

electrical heating elements positioned at one side of said baffle means in one of said compartments, said heating elements extending substantially parallel to said baffle means;

a jet nozzle for the supply of water under pressure extending into a lower portion of said tank, and positioned with the axis of said jet nozzle at said one side of said baffle means,

said jet nozzle being arranged to direct a substantially vertically directed high velocity jet of water into said one compartment and toward said top closure; and,

water oulet means located at an upper end of said tank;

whereby water injected into said tank through said nozzle traverses said heating elements and produces a continuous recirculatory flow within said tank upwardly of said one side of said baffle means and downwardly between said baffle means and said vertical wall of said tank.

4,584,464

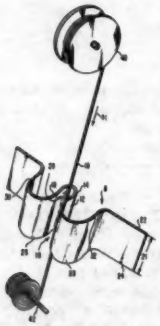
HEATING ELEMENT

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Co., Los Angeles, Calif.

Filed Jul. 2, 1984, Ser. No. 627,146

Int. Cl.[4] F24H *3/00*; H05B *1/00*; H01C *3/10*

U.S. Cl. 219—354 **33 Claims**



1. An electrically energizable high intensity radiant energy heater capable of operating in normal and controlled atmospheric environments and of providing as isothermal high temperature region for fiber fusion and fiber processing of optic fibers having longitudinal axes, comprising an enclosure having a configuration for receiving at least one of the optic fibers, said enclosure configuration defining a substantially enclosed elongated generally tubularly-shaped pocket enabling the the formation of generally tubularly-shaped isotherms spaced closely together for providing the isothermal high temperature region in said enclosure, and entry means in said enclosure for enabling the optic fiber to be moved in a direction at an angle to the fiber axis into the isothermal high temperature region within said enclosure.

4,584,465

METHOD AND APPARATUS FOR HEATING PROCESS AIR FOR INDUSTRIAL PURPOSES

Goran Mathisson, and Sven Santen, both of Hofors, Sweden, assignors to Skf Steel Engineering AB, Hofors, Sweden

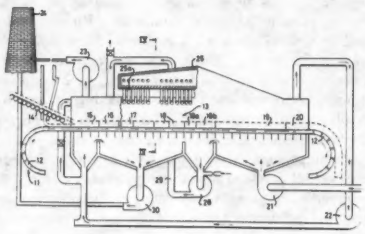
Continuation-in-part of Ser. No. 343,497, Jan. 28, 1982, abandoned. This application Mar. 29, 1983, Ser. No. 479,944

Claims priority, application Sweden, Oct. 22, 1981, 8106242

Int. Cl.[4] B23K *9/00*

U.S. Cl. 219—383 **3 Claims**

1. A method of heating process air for industrial purposes to a predetermined temperature comprising generating a plasma gas stream by passing a first air-flow portion through a plasma generator means and thus heating said portion to a temperature sufficiently high to cause ionization of nitrogen and oxygen in the portion and thus form a plasma gas, immediately thereafter adding to said plasma gas a material containing carbon and/or hydrocarbon in sufficient quantity that when said material is reacted with the plasma gas the ratio $CO+H_2/CO_2+H_2O$ is at least 0.1, thereby substantially avoiding the formation of nitrogen oxide, and immediately thereafter mixing with the plasma gas stream an air flow in such proportion that the predetermined temperature is achieved in the final mixture and that the



formation of nitrogen oxides in said final mixture is thereby avoided.

4,584,466

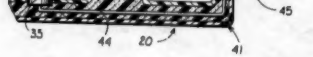
FOOD SERVICE SYSTEM

Manny L. de Mola, c/o Anthony R. Parrish, Jr., Suite 600, 799 Brickell Plz., Miami, Fla. 33131

Filed Jan. 2, 1985, Ser. No. 688,257

Int. Cl.[4] H05B *3/02*; F24C *7/10*

U.S. Cl. 219—386 **5 Claims**



1. In a food service apparatus for serving a plurality of consumers generally the same meal, said food service apparatus including a plurality of trays, each tray of said plurality of trays being arranged to receive one meal for one consumer, said tray including a plurality of locations, each location of said plurality of locations being such as to receive one dish containing a food item, at least one location of said plurality of locations being a heating location for heating a dish received thereon when said dish includes heating means, in combination therewith, said heating location including a first pair of electrical contacts exposed for engaging a dish received on said heating location, said tray including a pair of handles, one handle of said pair of handles being at each end of said tray for supporting said tray, a second pair of electrical contacts, one electrical contact of said second pair of electrical contacts being on a each of said handles on the lower surface thereof, first conductor means connecting one contact of said first pair of electrical contacts to one contact of said second pair of electrical contacts, and second conductor means connecting the other contact of said first pair of electrical contacts to the other contact of said second pair of electrical contacts, a carrier for receiving said plurality of trays, said carrier comprising a container including opposed side walls, a plurality of pairs of rails carried by said side walls and electrically insulated therefrom, each pair of rails of said plurality of pairs of rails including two rails spaced apart to receive opposite ends of one tray of said plurality of trays, a jack carried by said container, circuit means connecting said jack to said plurality of pairs of rails to place a voltage between the rails of each pair of rails, and ventilating means for passing ventilating air through said container, the arrangement being such that said second pair of electrical contacts can receive electrical power from said rails and provide power to a dish on said heating location, said dish on said heating location being heated only when said dish on said heating location includes heating means, said ventilating

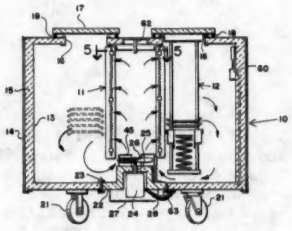
means serving to maintain unheated dishes cool while said heated dishes are heated.

4,584,467

FORCED HOT AIR HEATING CABINET FOR SELF-LEVELING PLATE DISPENSERS AND THE LIKE

Guillermo A. Ruiz, Miami, Fla., assignor to Shelley Manufacturing Division of Alco Food Service Equipment Company, Miami, Fla.

Filed Jan. 28, 1985, Ser. No. 695,615
Int. Cl.[4] H05B *1/02*; A47F *1/06*
U.S. Cl. 219—400 **9 Claims**



1. In a forced hot air heating cabinet having an interior chamber for the reception of self-leveling plate dispensers of the type having a vertically-extending, tank having a top and a bottom, and being open at the top for receiving stacked plates and dishes to be dispensed and including mechanism resiliently constraining the stacked plates and dishes therein in an upward, outwardly-projecting direction from underneath for dispensing from the top of the tank, the open-top having vertically arranged through openings permitting sideward flow of air therethrough, the combination comprising; an insulating cabinet having a plurality of top openings for replaceable vertical installation of a like plurality of said self-leveling plate dispensers, means in said cabinet for force-blowing heated air in vertically extending laminar flow through the openings in said plate dispenser tanks installed in said cabinet openings, said removable lids covering said cabinet openings and abuttingly constraining said stacked plates to be dispensed in an inward direction for heating and maintaining heated said stacked plates to be dispensed.

4,584,468

ELECTRON IMAGE TUBE HAVING A TRAPPING SPACE FOR LOOSE PARTICLES

Johannes N. van de Wiel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 23, 1984, Ser. No. 633,373
Claims priority, application Netherlands, Jul. 22, 1983, 8302616
Int. Cl.[4] H01J *31/50*
U.S. Cl. 250—213 VT **7 Claims**

1. An electron image tube, comprising:

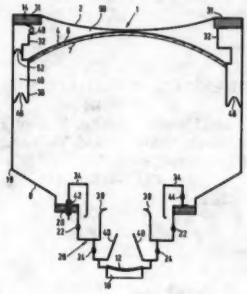
an envelope including an entrance window, an exit window, and a jacket portion, the jacket portion being connected to the entrance window and the exit window;

an entrance luminescent screen accommodated within the envelope, the entrance luminescent screen being arranged adjacent to the entrance window;

an image-forming luminescent screen accommodated within the envelope, the image-forming luminescent screen being arranged adjacent to the exit window, and

an electron-optical imaging system, accommodated within the envelope, for imaging electrons emerging from the entrance luminescent screen onto the image-forming luminescent screen,

characterized in that the electron-optical imaging system includes a sleeve accommodated within the envelope, the sleeve being spaced from the jacket portion so that a trapping space is formed between the jacket portion and the sleeve, the sleeve including a funnel-shaped member which narrows to an opening, the funnel-shaped member



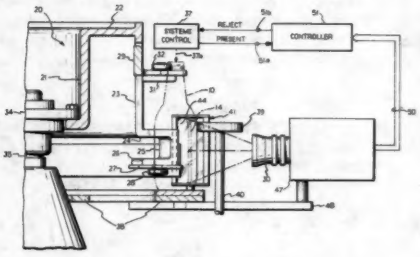
narrowing in a direction towards the trapping space, so that loose particles within the tube can pass into the trapping space through the opening, the loose particles within the trapping space being trapped by the funnel-shaped member.

4,584,469

OPTICAL DETECTION OF RADIAL REFLECTIVE DEFECTS

Sam Lovalenti, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 30, 1982, Ser. No. 454,512
Int. Cl.[4] G01N *9/04*
U.S. Cl. 250—223 B **14 Claims**



1. Apparatus for inspecting a translucent container to detect a radial reflective defect in the container and for rejecting the container in response to a reject signal indicating the presence of a reflective defect, said apparatus comprising:

means for illuminating the container by focusing a radiant beam of light to form a narrow elongated image extending in a direction parallel to the longitudinal axis of the container along a sidewall portion of the translucent container being inspected and directing said beam against the interior surface of said illuminated wall portion in a direction forming an acute angle to a radial plane extending through and parallel to said illuminated portion of the container;

camera means focused on the exterior of said illuminated portion of the container wall for sensing the intensity of light reflected from said illuminated portion, said camera means viewing the illuminated portion from a direction forming an angle ranging from between 75 degrees to 105 degrees from the path of said beam of light, said reflected light intensity sensing camera means providing a plurality

of electrical signals each proportional to the intensity of reflected light from a corresponding position on said illuminated wall portion of the container; and,

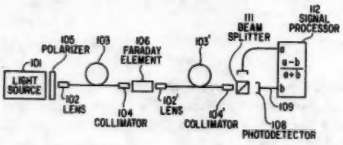
means responsive to said plurality of electrical signals for providing a reject signal when one of said plurality of electrical signals exceeds a predetermined threshold in response to the presence of a reflective defect.

4,584,470

SINGLE-POLARIZATION FIBER OPTICS MAGNETIC SENSOR

Hisao Iizuka, and Hiroshi Kajioka, both of Hitachi, Japan, assignors to Hitachi Cable Limited, Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,941
Int. Cl.[4] G01B *11/00*
U.S. Cl. 250—231 R **9 Claims**



1. In a single-polarization fiber optics magnetic sensor comprising:

a light source; a Faraday rotation element; a photo-detector; and optical waveguide means for optically coupling together said light source, Faraday rotation element and photo-detector;

the improvement wherein:

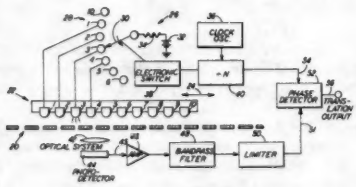
said optical waveguide means comprises polarization-maintaining optical fibers coupled to opposite sides of said Faraday rotation element without a polarizer and without an an analyzer interposed between said Faraday rotation element and said respective polarization-maintaining optical fibers, said optical fibers serving only as an optical waveguide for transmitting optical signals.

4,584,471

ACTIVE TRANSLATION SENSOR

Fred C. Gabriel, Stamford, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 19, 1983, Ser. No. 543,569
Int. Cl.[4] H01J *3/14*
U.S. Cl. 250—237 G **8 Claims**



1. An active translation sensor comprising, in combination:

a first member comprising a fixed transmission grating;

a second member comprising a movable linear array of light-emitting diodes disposed in juxtaposition relationship with respect to one side of said fixed transmission grating, said second member being movable with respect to said first member;

means for successively applying electrical energy to each of said light-emitting diodes in a cyclical manner;

photodetector means disposed on the other side of said fixed transmission grating for detecting light transmitted through said gratings;

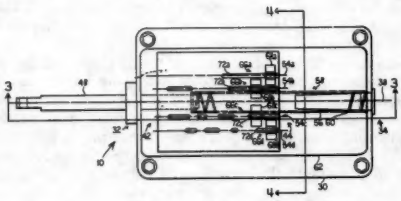
phase detector means for receiving a first signal corresponding to the phase of said means for successively applying electrical energy to said light-emitting diodes and a second signal corresponding to the light detected by said photodetector means and outputting a signal corresponding to the phase difference between said two signals, thereby indicating the relative linear position of one of said members with respect to the other.

4,584,472

LINEAR POSITION ENCODER

Wayne T. Wiblin, Ashtabula; Ronald D. Surma, Madison, and Grant C. Melocik, Chardon, all of Ohio, assignors to Caterpillar Industrial Inc., Mentor, Ohio

Filed Feb. 21, 1984, Ser. No. 582,114
Int. Cl.[4] H01J *3/14*
U.S. Cl. 250—237 G **16 Claims**



1. A position encoder for sensing a plurality of positions of a control member of a vehicle, comprising:

a base having first and second end portions and a central longitudinal axis passing through said end portions;

a moveable member having a substantially planar first mounting surface and a first end portion, said mounting surface having a plurality of spaced apart pathways extending substantially parallel to one another and to said central axis along said first mounting surface, said moveable member first end portion passing through said base first end portion and being connectable to said control member, said moveable member being moveable along said central axis between said base end portions in response to movement of said control member;

a mounting member having a substantially planar second mounting surface positioned substantially parallel to and spaced apart from said first mounting surface, said second mounting surface having a plurality of spaced apart pathways extending substantially parallel to one another along said second mounting surface, each of said pathways being aligned with a respective one of said first mounting surface pathways;

a plurality of sensors, each of said sensors being mounted on said second mounting surface along a different one of said second mounting surface pathways; and,

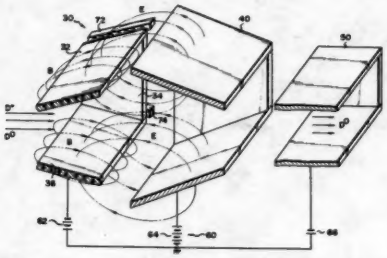
a plurality of sensible members, each of said sensible members being mounted on said first mounting surface along said first mounting surface pathways and extending toward said second mounting surface, said sensible members being of a construction and location sufficient for sensing by predetermined ones of said sensors in response to the position of said control member.

4,584,473

BEAM DIRECT CONVERTER

Kiyoshi Hashimoto, Yokohama, and Toru Sugawara, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 17, 1983, Ser. No. 523,762
Claims priority, application Japan, Sep. 29, 1982, 57-168543
Int. Cl.[4] H05H 3/02
U.S. Cl. 250—251 22 Claims



1. A beam direct converter for recovering the energy of ions, comprising:

collecting means for collecting ions and converting the energy of the collected ions into electrical energy;

electron suppressing means, provided upstream of the collecting means in the beam of ions entering the beam direct converter, for suppressing the passing of electrons produced outside the beam direct converter; and

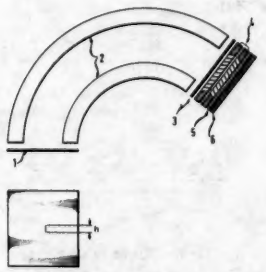
magnetic-field generating means for generating a magnetic field to suppress the leaking of secondary electrons produced by the suppressing means, from the vicinity of the suppressing means.

4,584,474

ELECTRON ENERGY ANALYZER WITH MULTI-CHANNEL DETECTOR

René Franchy, Julich; Harald Ibach, Aachen-Verlautenheide, and Heinz D. Bruchmann, Aldenhoven-Durbosland, all of Fed. Rep. of Germany, assignors to KFA Julich, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,691
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311195
Int. Cl.[4] H01J 40/00, 47/00
U.S. Cl. 250—305 5 Claims



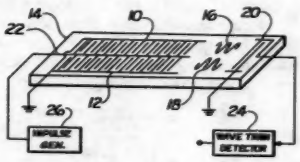
1. In an electron energy analyzer having an entrance aperture wherein electrons received in the energy-dispersive system are simultaneously analyzed at the exit thereof through a multi-channel detector operating with channel plates; the improvement comprising: a grid which is to be brought to the potential of the entrance aperture plate being arranged at the exit of the analyzer at a minimum distance from said channel plate or plates, said grid having mesh width dimensions in the range between 10 and 100 μm, said mesh width being small in comparison with the dimension of the electron beam so that no additional structure is provided in the registered electron spectrum due to the grid; a grid mask whose aperture conforms with the beam dimension and the spacing between electrodes in the analyzer, the surface of the channel plate facing said grid mask being negatively biased with respect to said grid mask for aspirating electrons straying from the facing channel plate surface through the grid.

4,584,475

SURFACE ACOUSTIC WAVE INFRARED LINE IMAGING ARRAY

Binneg Y. Lao, Rancho Palos Verdes, Calif., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 29, 1984, Ser. No. 614,584
Int. Cl.[4] H01L 25/08
U.S. Cl. 250—332 22 Claims



1. A surface acoustic wave line imaging array for converting a received infrared image to corresponding electrical signals comprising:

a first interdigital transducer receiving a line segment of an infrared image for generating a first surface acoustic wave train in response to an impulse signal;

a second interdigital transducer parallel to said first interdigital transducer for generating a second (reference) surface acoustic wave train in response to said impulse signal, said second interdigital transducer not receiving said infrared image line segment and positioned so that said second surface acoustic wave has the same amplitude but is 180° out of phase with said first surface acoustic wave; and

a third interdigital transducer disposed proximate the ends of said first and second interdigital transducers for summing said first and second surface acoustic waves to generate an amplitude modulated wave train signal whose individual waves are modulated in accordance with the intensity profile of the infrared image line segment received by said first interdigital transducer.

4,584,476

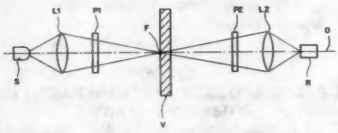
DEVICE FOR THE NON-DESTRUCTIVE TESTING OF THE INTERNAL STRESS STATE OF HEAT TEMPERED PLATE GLASS

Amedeo Colombotto, Chieti; Ernesto Della Sala, and Luciano Biasutti, both of Vasto, all of Italy, assignors to SOCIETA ITALIANA VETRO SIV S.p.A., Vasto, Italy

Filed Sep. 19, 1983, Ser. No. 534,627
Claims priority, application Italy, Sep. 21, 1982, 49143 A/82
Int. Cl.[4] G01N 21/21; G01L 1/24
U.S. Cl. 250—338 10 Claims

1. Device for the non-desctructive testing of the internal stress state of heat tempered plate glass including: a sample comprising heat tempered plate glass; a source of monochromatic near infrared radiation for emitting near infrared radiation along an optical axis; first optical concentration means on said optical axis for concentrating the incident radiation emitted from said source on a point of a heat tempered glass plate

placed with its thickness along said optical axis; first optical polarization means, placed between said first concentration means and said point of the heat tempered glass plate, for polarizing the incident radiation coming from said first concentration means, in a first polarization plane; second optical polarization means for polarizing the incident radiation coming from said point on the heat tempered glass plate, in a second polarization plane rotated 90° with respect to said first polarization plane; second optical concentration means for receiving the radiation from said second polarization means; and an infrared light sensor for receiving the radiation coming from said second concentration means, comprising means for generating an electrical signal controlled by the intensity of the radiation; electronic comparator means for comparing said signal of the radiation intensity with a threshold signal; and signalization means for signaling whether said intensity is greater than or less than said threshold signal.



4,584,477

METHOD FOR MEASURING DISTANCE AND OPTICAL DISTANCE METER

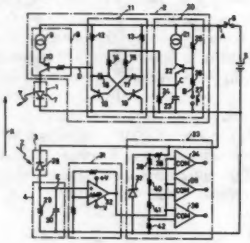
Tsunemi Yoshino, Nara; Toshihiko Taniguchi, Osaka, and Hirohiko Ina, Nishinomiya, all of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Nov. 28, 1984, Ser. No. 675,705

Claims priority, application Japan, Nov. 29, 1983, 58-224757; Jun. 12, 1984, 59-121217; Jul. 11, 1984, 59-143684

Int. Cl.⁴ G01C *3/08*

U.S. Cl. 250—351 **18 Claims**



2. An optical distance meter comprising

a light transmitter for transmitting an infrared light to an object,

a light transmitting means for making pulse-modulation of said infrared light with a modulation signal having frequency which is sweepingly varied within a predetermined frequency range,

a light beam receiving means for receiving reflected light from said object to convert it into electric signal,

a tuning means for making resonation of said electric signal, with a resonation frequency selected in said predetermined frequency range to produce a high voltage output signal,

a distance signal generating means for generating a distance signal corresponding to said high voltage output signal.

4,584,478

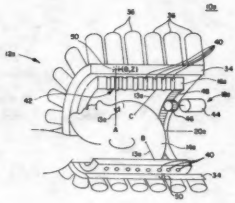
RADIONUCLIDE ANNULAR SINGLE CRYSTAL SCINTILLATOR CAMERA WITH ROTATING COLLIMATOR

Sebastian Genna, and Sing-Chin Pang, both of Belmont, Mass., assignors to Digital Scintigraphics, Inc., Belmont, Mass.

Filed Feb. 28, 1983, Ser. No. 470,475

Int. Cl.⁴ G01T *1/20*

U.S. Cl. 250—363 S **2 Claims**



1. A radionuclide emission tomography camera for sensing gamma ray emissions from a source within the field of view, comprising:

a fixed, position-sensitive detector means, responsive to said gamma ray emissions and surrounding said field of view, for detecting the contact position and the trajectory from which a gamma ray emission originates, said fixed, position-sensitive detector including a single continuous stationary scintillation crystal;

rotatable collimator means, disposed between the fixed, position-sensitive detecto means and said field of view, and incuding at least one array of collimator elements, for restricting and collimating the gamma ray emissions; and

means for rotating said collimator means relative to the fixed, position-sensitive detector, for exposing different sections of the position-sensitive detector to the gamma ray emissions in order to view the source from different angles.

4,584,479

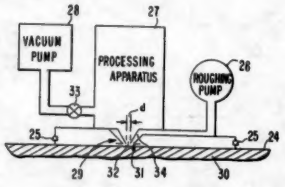
ENVELOPE APPARATUS FOR LOCALIZED VACUUM PROCESSING

John R. Lamattina, Wakefield, and Paul F. Petric, Swampscott, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 435,179, Oct. 19, 1982. This application Mar. 5, 1985, Ser. No. 708,104

Int. Cl.⁴ H01J *37/18, 33/02*

U.S. Cl. 250—441.1 **15 Claims**



1. Charged particle beam apparatus wherein a thin, flexible workpiece surface is treated by the beam comprising a high vacuum envelope in a first vacuum and having a tip containing an aperture, a charged particle beam source located in the vacuum envelope for deriving a charged particle beam that is directed through the aperture as a treating beam for the workpiece surface, means for maintaining only a portion of the workpiece surface in approximate registration with the aperture in a vacuum such that the beam can propagate from the

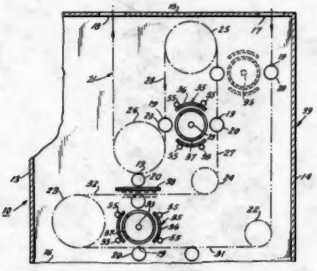
source to the workpiece surface portion exclusively in a second vacuum having a value that is only somewhat lower than the high vacuum, said maintaining means including: (a) means for holding the workpiece so that all of the workpiece, except said workpiece surface portion, is in an ambient environment not subjected to the vacuum; (b) means for forming a gap between the tip and the workpiece without contacting the workpiece so that the tip is positioned opposite from the workpiece surface, the gap being dimensioned to minimize the flow of gas through it and to enable the workpiece to be moved so that the workpiece surface can move generally transversely of the beam propagation direction without contacting any of the tip to enable different portions of the workpiece surface to be treated in a vacuo by the beam at differing times, and (c) means forming a vacuum seal in the gap for minimizing degradation of the vacuum through the gap; said means for forming the vacuum seal including: vacuum pump means connected to a first fluid passage surrounding the aperture for providing a third vacuum between the tip and the workpiece surface in the gap, the first fluid passage causing the third vacuum to surround the second vacuum, the third vacuum being a lower vacuum than the second vacuum, whereby a radial graded vacuum seal is formed in the gap, and a second fluid passage for providing a flow of gas outside of the first fluid passage so that the flow of ambient air into the first, second and third vacuums is prevented, the aperture area of the tip and the treated area in the second vacuum being sufficiently small relative to the workpiece surface area to minimize bowing of the thin, flexible workpiece and to permit treatment close to the workpiece edge without loss of vacuum in the gap, the first fluid passage increasing in cross-sectional area with distance from from the gap so as to provide high vacuum conductance to the tip.

4,584,480

RADIATION CURING APPARATUS FOR CYLINDRICAL ARTICLES

Stanley Silverman, Denville, and Joseph Ficon, Franklin Lakes, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Apr. 25, 1984, Ser. No. 603,612
Int. Cl.[4] G01N *21/00*
U.S. Cl. 250—453.1 **12 Claims**



1. Apparatus for radiation curing of decorative and protective coatings on the exterior of a tubular article, said apparatus including:

elongated parallel first and second lamps for generating curing radiation;

a conveyor and a plurality of support means equally spaced along the length of said conveyor for carrying tubular articles having radiation curable coatings thereon along a predetermined path passing said lamps, said path being arranged to expose the entire surface of said exterior of said articles to said curing radiation without rotating said articles about said support means and without rotating said support means, the longitudinal axes of said lamps being generally parallel to the tubular axes of said tubular articles while radiation from said lamps impinges on said curable coatings for curing thereof;

said path including first and second sections generally parallel to each other, and also including third and fourth sections generally parallel to each other;

said lamps having their longitudinal axes extending transverse to direction of movement for said support means along said path; said longitudinal axis of said first lamp extending between said first and second sections, said longitudinal axis of said second lamp extending between said third and fourth sections;

said first and second sections being transverse to said third and forth sections;

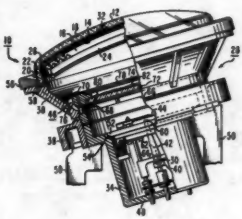
said conveyor including a closed loop chain; a plurality of rotatable sprockets supporting said chain in the vicinity of said lamps, each of said support means including a pin for supporting said tubular article by entering same through one end thereof, contacting the interior surface thereof, and permitting said tubular article to be freely suspended from said pin, said pins extending generally parallel to the axes on which said sprockets rotate.

4,584,481

METHOD OF TESTING A PANEL ASSEMBLY OF A COLOR CATHODE-RAY TUBE

James R. Matey, Mercerville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 13, 1984, Ser. No. 671,128
Int. Cl.[4] G01N *21/64*; H01J *9/227, 9/42*
U.S. Cl. 250—459.1 **10 Claims**



1. A method of testing a panel assembly of a color cathode-ray tube prior to sealing a faceplate panel of said assembly to a funnel section of said tube in order to detect defects in the assembly including dents and misregistration of an apertured shadow mask mounted therein adjacent to a luminescent screen disposed on said faceplate panel comprising the steps of:

exposing said screen to radiation passed through apertures in said mask including ultraviolet but substantially excluding visible radiation, and

examining said luminescent screen for variations in color from light emitted by the screen, whereby said variations in color are indicative of defects in said assembly.

4,584,482

NOISE ERASING METHOD AND APPARATUS FOR STIMULABLE PHOSPHOR SHEET

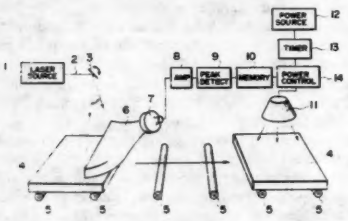
Toshiaki Suzuki, and Kazuo Horikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 8, 1982, Ser. No. 440,046
Claims priority, application Japan, Nov. 9, 1981, 56-179287
Int. Cl.[4] G01V *1/161*
U.S. Cl. 250—459.1 **15 Claims**

1. In a noise erasing method for a stimulable phosphor sheet capable of being repeatedly used for radiation image recording and read-out, in which development of noise at the time of radiation image read-out is eliminated by exposing the stimula-

ble phosphor sheet to light prior to the radiation image recording on the stimulable phosphor sheet,

the noise erasing method for the stimulable phosphor sheet comprising the steps of: detecting the level of residual



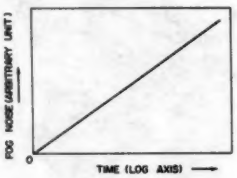
radiation energy remaining on said stimulable phosphor sheet, and controlling the exposure amount of said stimulable phosphor sheet to said light according to the detected level of residual radiation energy.

4,584,483

NOISE ERASING METHOD IN RADIATION IMAGE RECORDING AND REPRODUCING METHOD

Hisatoyo Kato, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 18, 1983, Ser. No. 495,871
Claims priority, application Japan, May 18, 1982, 57-83797
Int. Cl.[4] G01T *1/00*
U.S. Cl. 250—459.1 **5 Claims**



1. A noise erasing method in which first erasing is conducted by exposing a stimulable phosphor sheet capable of being repeatedly used for radiation image recording and reproducing to light, thereby erasing radiation energy stored in said stimulable phosphor sheet due to a radiation image once stored therein, and then second erasing is conducted by exposing said stimulable phosphor sheet to light immediately before the next radiation image recording is carried out, thereby erasing fog developing in said stimulable phosphor sheet after said first erasing, wherein the improvement comprises controlling the exposure amount in said second erasing according to the time interval between said first erasing and said second erasing.

4,584,484

MICROSCOPE FOR PRODUCING HIGH RESOLUTION IMAGES WITHOUT PRECISION OPTICS

Richard A. Hutchin, 56 Framingham Rd., Marlboro, Mass. 01752

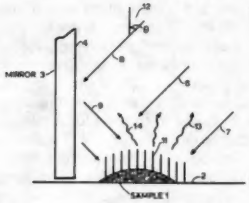
Filed Oct. 3, 1983, Ser. No. 538,764
Int. Cl.[4] G02B *21/06*
U.S. Cl. 250—550 **25 Claims**

6. A system for producing a representation of an optical image of a sample under examination comprising:

a. means for exposing said sample to a moving sinusoidal pattern having alternate light and dark bands of known phase having a spatial frequency which varies between a first and second value during each pass of said pattern over said specimen in a plurality of directions;

b. means for recording a set of signals proportional to the intensity of light transmitted from said sample during each pass of said pattern over said sample under examination in each of said directions;

c. means for extracting data indicative of phase and amplitude values of the fourier components of signals recorded by said recording means; and



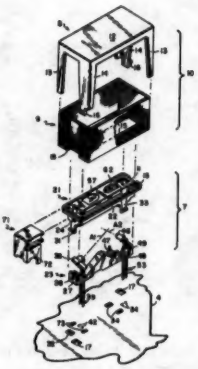
d. means for fourier transforming said data indicative of said phase and amplitude values of the fourier components of said signals recorded by said recording means for producing image data enabling reconstruction of the optical image of said sample under examination.

4,584,485

OPTICAL BLOCK IN SMOKE DETECTORS

Robert B. Powers, Norwell; Donald Adams, West Bridgewater, and Angelo A. Marsocci, Duxbury, all of Mass., assignors to American District Telegraph Company, Jersey City, N.J.

Filed Aug. 22, 1983, Ser. No. 524,994
Int. Cl.[4] G01N *15/06*
U.S. Cl. 250—574 **14 Claims**



1. An optical block for a smoke detector comprising:

a base having a first seat shaped to receive and locate a lamp in a position on a first light axis, and a second seat for locating a photocell in a position on a second light axis, the second axis intersecting the first axis;

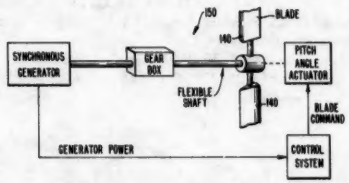
a cover forming two light passages along the intersecting axes shielding the photocell position from the lamp position, the cover having a socket shaped to receive the base, and interengaging means holding the base and cover attached to each other.

4,584,486

BLADE PITCH CONTROL OF A WIND TURBINE

Allen G. Quynn, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 9, 1984, Ser. No. 597,933
Int. Cl.[4] F03D 7/04
U.S. Cl. 290—44 10 Claims



1. A control system for adjusting the pitch of variable-pitch angle blades in a wind turbine generating electric power and for maintaining dynamic stability under all conditions, wherein at low wind speeds said control system maintains the pitch of said blades at an angle close to the value providing maximum torque, and at high wind speeds said control system adjusts the pitch of said blades to maintain rated power, said control system comprising:

a. means for adding a signal proportional to the rate of change of electric power generated by said wind turbine and a nominal blade control signal; and

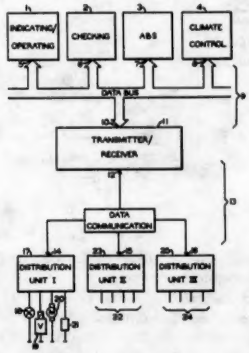
b. means, coupled to said adding means, for generating a control signal from the output of said adding means to control the pitch of said variable-pitch blades, said generating means including means for ensuring that the values of said control signal remain above a minimum level needed to ensure the blade pitch at said angle close to the value for providing maximum torque.

4,584,487

VEHICLE CONTROL ARRANGEMENT FOR MONITORING AND CONTROLLING A PLURALITY OF VEHICLE COMPONENTS

Karl-Heinz Hesse, Gehrden; Peter Liermann, Barsinghausen, and Detlev Neuhaus, Langenhagen, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 2, 1984, Ser. No. 657,108
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3335932
Int. Cl.[4] B60Q 1/00; B62D 45/00
U.S. Cl. 307—10 R 8 Claims



1. A component control arrangement for use on transit-type vehicles having a distributed plurality of vehicle components to be monitored and controlled, said component control arrangement comprising:

(a) a plurality of function control modules, each having at least one communication terminal to receive and transmit electrical signals associated with the operation of the vehicle components;

(b) said function control modules having disposed therein component operating means for deriving from a portion of such electrical signals, a set of operating instructions, such set of operating instructions being derived by said component operating means as a function of a plurality of predetermined vehicle safety and operating parameters and an evaluation of a second portion of such electrical signals, such second portion of said electrical signals originating from the vehicle components in the form of status indications;

(c) a data bus member electrically coupled to each of said communication terminals of said plurality of function control modules;

(d) a plurality of distribution units, each receptive of a predesignated portion of such set of control instructions;

(e) transceiver means in communication with said data bus and said plurality of distribution units for transmitting such status indications and such set of control instructions between said component operating means and said distribution units; and

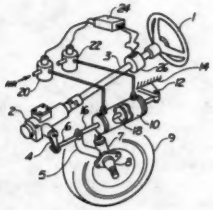
(f) a plurality of vehicle operating devices connected to each one of said plurality of distribution units, each of said vehicle operating devices being operable, upon receiving such portion of such set of control instructions, to execute a predetermined set of vehicle operations and to generate at least a portion of such status indications readable by said component operating means upon execution of such predetermined set of vehicle operations by said plurality of vehicle operating devices.

4,584,488

CONTROLLER FOR GENERATING A PAIR OF MUTUALLY EXCLUSIVE PULSE TRAIN SIGNALS

Kenneth S. Towers, Royal Oak, and William C. Eddy, West Bloomfield, both of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 13, 1984, Ser. No. 670,687
Int. Cl.[4] H03K 3/00; B62D 5/06
U.S. Cl. 307—106 17 Claims



1. A controller for alternatively generating a pair of pulse train signal in response to an input signal having a direction component and a magnitude component; comprising

offset means for biasing the input signal to generate a biased input signal such that the magnitude component corresponding to a zero magnitude has a midpoint value;

saw tooth generator means for generating a saw tooth wave having a predetermined repetition rate;

deadband generator means for generating a clipping signal having a predetermined value;

a clipping amplifier responsive to said saw tooth wave and said clipping signal for generating a clipped saw tooth

wave in which minimum value of said saw tooth wave is limited to said predetermined value;

reference signal generator means for generating at least two reference signals having values corresponding to said midpoint value;

first difference amplifier means generating a first difference signal having an amplitude proportional to the difference between one of said reference signals and said biased input signal;

second difference amplifier means for generating a second difference signal having an amplitude inversely proportional to the difference between the other of said reference signals and said biased input signal;

first comparator means for generating a first pulse train signal in response to said first difference signal having an amplitude greater than the instantanious value of said clipped saw tooth wave, each pulse in said first pulse train signal having a duration proportional to amplitude of said first difference signal;

second comparator means for generating a second pulse train signal in response to said second difference signal having an amplitude greater than the instantaneous value of said clipped saw tooth, wave, each pulse in said second pulse train signal having a duration proportional to the amplitude of said second difference signal.

4,584,489

MULTICHANNEL TIME-VOLTAGE CONVERTER

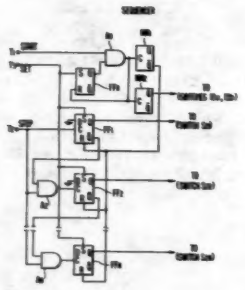
Masaru Tanaka, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Jul. 24, 1984, Ser. No. 634,118

Claims priority, application Japan, Aug. 2, 1983, 58-120973[U]

Int. Cl.⁴ H03L *5/00*; H03K *5/19*

U.S. Cl. 307—264 **2 Claims**



1. A multichannel time-voltage converter for generating a plurality of voltages which respectively correspond to the time period between a start pulse and each of a plurality of stop pulses, said converter comprising:

a sawtooth wave generator circuit for generating a sawtooth wave;

a plurality of track and hold circuits having their inputs connected to an output of said sawtooth wave generator and having separate outputs for each of said plurality of circuits;

a sequencer means operatively connnected to said sawtooth wave generator and to said plurality of track and hold circuits for controlling said generator and said circuits in response to said start pulse and said plurality of stop pulses which are input thereto;

wherein said sequencer starts generation of a sawtooth wave in response to said start pulse and causes said plurality of track and hold circuits to respectively sequentially track and hold a value of said sawtooth wave in response to said stop pulses such that the time period between said start pulse and each of said plurality of stop pulses are converted to respective voltages which are held and output by respective track and hold circuits.

4,584,490

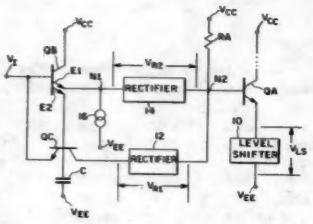
INPUT CIRCUIT FOR PROVIDING DISCHARGE PATH TO ENHANCE OPERATION OF SWITCHING TRANSISTOR CIRCUITS

Jeffrey A. West, Pleasant Grove, Utah, assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Mar. 30, 1984, Ser. No. 595,061

Int. Cl.⁴ H03K *17/04, 17/60, 19/013, 19/088*

U.S. Cl. 307—456 **12 Claims**



1. A circuit responsive to an input signal at an input terminal for regulating the current/voltage level at a control electrode of a transistor circuit means, the circuit including:

a bipolar input transistor means having at least one base coupled to the input terminal, a first emitter, and a second emitter, the control electrode being responsive to the voltage at the first emitter;

a like-polarity bipolar discharge transistor having a base coupled to the second emitter, an emitter coupled to the input terminal; and a collector coupled to the control electrode; and

a capacitive element coupled between the base of the discharge transistor and a terminal for receiving a supply voltage.

4,584,491

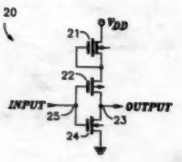
TTL TO CMOS INPUT BUFFER CIRCUIT FOR MINIMIZING POWER CONSUMPTION

Richard W. Ulmer, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 12, 1984, Ser. No. 570,114

Int. Cl.⁴ H03K *19/094*

U.S. Cl. 307—475 **11 Claims**



1. A TTL to CMOS input buffer circuit for minimizing power consumption, comprising:

a first MOS transistor of a first conductivity type having a first current electrode coupled to a terminal for receiving a supply voltage, and both a control electrode and a second current electrode connected together, for providing a reference current, said first MOS transistor being a depletion transistor;

a second MOS transistor of a second conductivity type having a first current electrode coupled to the second current electrode of the first MOS transistor, a control electrode coupled to the single input, and a second current electrode coupled to an output terminal; and

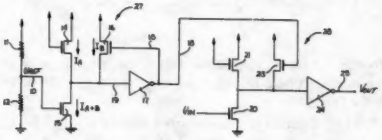
a third MOS transistor of the first conductivity type having a first current electrode coupled to the output terminal for providing an output voltage having CMOS voltage levels in response to the presence of an input voltage having TTL voltage levels at the single input, a control electrode connected directly to the control electrode of the second MOS transistor at the single input terminal, and a second current electrode coupled to a reference voltage, wherein the second MOS transistor is size ratioed with respect to the third MOS transistor so that the second MOS transistor is strongly conductive with respect to the third MOS transistor at a predetermined switchpoint voltage having a value between said power supply voltage and reference voltage.

4,584,492

TEMPERATURE AND PROCESS STABLE MOS INPUT BUFFER

Patrick O. Sharp, Aptos, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 6, 1984, Ser. No. 637,884
Int. Cl.⁴ H03K *17/30*
U.S. Cl. 307—475 **15 Claims**



1. In an MOS integrated circuit, a buffer for sensing an input signal which varies above and below a reference potential comprising:

a first circuit coupled to receive said reference potential, said first circuit providing a buffered reference potential;

a first amplifier means for receiving said buffered reference potential at its input;

a feedback path coupling the output of said first amplifier means to said first circuit so as to cause said buffered reference potential to maintain said first amplifier means in a predetermined operating range, said first amplifier means thereby providing a compensated reference potential;

a second circuit, substantially identical to first circuit, coupled to receive said input signal, said second circuit providing a buffered input signal;

a second amplifier means for receiving said buffered input signal at its input and for providing an output signal for said buffer;

an electrical path coupling said compensated reference potential to said second circuit thereby providing a compensated input signal;

whereby a buffer is realized which operates over a wide temperature and process variation range.

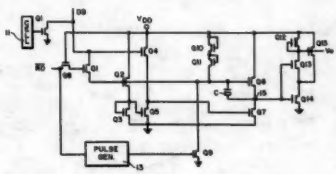
4,584,493

SELF REFERENCED SENSE AMPLIFIER

Donald T. Y. Lee, Santa Clara, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Oct. 5, 1984, Ser. No. 658,000
Int. Cl.⁴ H03K *5/19*; G01R *19/165*; G11C *7/06*
U.S. Cl. 307—530 **8 Claims**

1. A sense amplifier for use in connection with a signal line to read information appearing as binary signals on said signal line during READ operations, said signal line being precharged before each READ operation, said sense amplifier comprising a first control stage including first and second series connected enhancement type FETs, the gate of said first FET being connectable to said signal line, said first control stage having an output connected between its FETs, the gate of said second FET being connected to said output; a second control stage including first and second series connected enhancement type FETs, the gate of said first FET of the second stage being connected to said signal line, the gate of said second FET of said second stage being connected to the output of the first control stage, said second control stage having an



output connected between its FETs; an output stage including first and second series connected enhancement type FETs, the gate of said first FET of said output stage being connectable to said signal line, the gate of said second FET of said output stage being connected to the output of said second control stage, said output stage having an output means connected between its FETs; and switching means connecting the gates of the first FETs of said first control stage and said output stage to said signal line prior to each READ operation and disconnecting them therefrom at the start of each READ operation.

4,584,494

SEMICONDUCTOR TIMER

Hideki Arakawa, and Hiromi Kawashima, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 29, 1983, Ser. No. 566,880
Claims priority, application Japan, Dec. 29, 1982, 57-229266
Int. Cl.⁴ H03K *17/296, 17/687*
U.S. Cl. 307—603 **14 Claims**

1. A semiconductor timer operatively connectable to receive clock pulses, comprising:

a first capacitor;

a charge circuit, operatively connected to said first capacitor, for performing a charging operation on said first capacitor;

a discharge circuit, operatively connected to said first capacitor, for performing a discharging operation on said first capacitor;

monitoring means, operatively connected to said first capacitor and said discharge circuit, for monitoring a voltage across said first capacitor and producing an electrical signal used for starting one of the charging operation of said charge circuit and the discharging operation of said discharge circuit; and

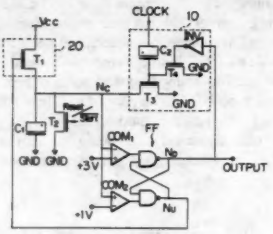
clock pulse enabling means, operatively connected to said monitoring means and at least one of said charge and discharge circuits, for enabling and preventing passage of the clock pulses in dependence upon the electrical signal;

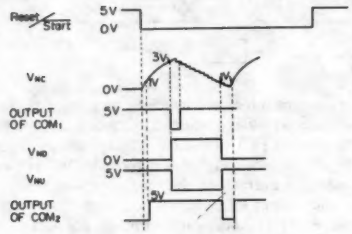
at least one of said charge circuit and said discharge circuit comprising:

a first transistor, operatively connected in series with said first capacitor, having a gate; and

a second capacitor, operatively connected to the gate of

said first transistor and said clock pulse enabling means, intermittently turning on said first transistor in response





to the clock pulses for performing one of the charging and discharging operations on said first capacitor.

4,584,495

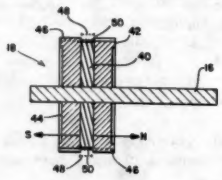
PERFORMANCE STEP MOTOR

Kenneth S. Kordik, Aptos, Calif., assignor to Applied Motion Products, Inc., Scotts Valley, Calif.

Filed Dec. 17, 1984, Ser. No. 682,659

Int. Cl.⁴ H02K *37/00*

U.S. Cl. 310—49 R **16 Claims**



1. An electromagnetic step motor having improved damping capabilities, comprising:

a stator portion including a plurality of congruent radially separated stator poles, the extremities of each of said stator poles being divided into a plurality of stator pole teeth, each said stator pole being wound with one or more conductive strands, such that when electrical current is generated in said strands a magnetic field is induced in said stator pole;

a rotor portion, radially displaced from but axially opposing said stator portion and rotating freely with respect thereto, including a shaft and at least one radially symmetrical permanent magnet portion radially surrounding said shaft and rotating therewith, which magnet portion is axially bordered by a pair of symmetrical opposing yokes such that an axial gap is formed between said pair of yokes to define a ring shaped zone of exposed magnet of said magnet portion opposing the stator portion, and further including electrically conductive means situated within said gap and circumferentially surrounding said ring-shaped zone; and

current providing means for generating electrical current within said conductive strands of the stator portion.

4,584,496

INTERNALLY FORCE-VENTILATED CLAW-POLE ALTERNATOR, PARTICULARLY FOR AUTOMOTIVE USE

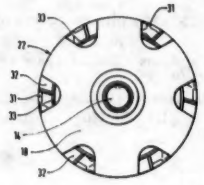
Manfred Frister, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 22, 1985, Ser. No. 693,260

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410760

Int. Cl.⁴ H02K *9/00*

U.S. Cl. 310—60 R **10 Claims**



1. Internally force-ventilated claw-pole alternator, particularly vehicular-type alternator, having

a stator (10, 11);

a rotor (R) rotatably retained for rotation within the stator, said rotor including a rotor shaft (14), a core (17), a winding (20) surrounding the core, two pole plates (18, 19) axially spaced from each other and engaging respective axial ends of the core, and interdigited claw poles (22, 23) extending axially towards each other from said pole plates, and leaving gaps (31) between adjacent pole plates;

and cooling blades (32) located in at least some of the gaps (31) and extending at an angle with respect to the axis of rotation of the rotor,

and comprising, in accordance with the invention,

a plastic sleeve (33) located beneath the claw poles (22, 23) of the rotor and having said blades (32) projecting radially outwardly therefrom, said blades being unitary with said sleeve.

4,584,497

BEAM SUPPORT FOR BAR WINDINGS OF LARGE ELECTRIC GENERATOR

Thomas R. Butman, Jr., Albany, and Nickolas Schmitt, deceased, late of Schenectady, both of N.Y. (by Marjorie Schmitt, executrix), assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 28, 1984, Ser. No. 656,126

Int. Cl.⁴ H02K *3/48*

U.S. Cl. 310—214 **17 Claims**

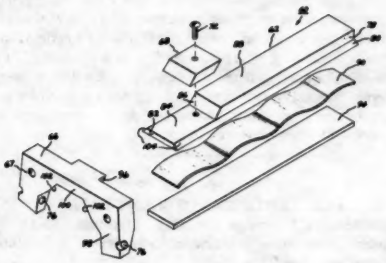
1. Apparatus for securing a "P" bar in a stator slot of a generator stator atop at least one armature bar disposed in said slot, said stator slot including at least one pair of dovetail slots radially disposed to permit fitting said at least one armature bar and said "P" bar under a wedge fitted into said dovetail slots, said stator including a taper at an outer end thereof, said taper intersecting said at least one pair of dovetail slots, comprising:

a beam;

said beam including angled edges at a first axial end thereof fittable into a portion of respective ones of said at least one

pair of dovetail slots when the wedge is fitted into an other portion of said at least pair of dovetail slots;

a yoke for stradling a second axial end of said beam when



said beam is fitted into said at least one pair of dovetail slots; and

means for securing said yoke to an axially outward end of said stator.

4,584,498

COMMUTATOR WITH WINDING CONNECTIONS

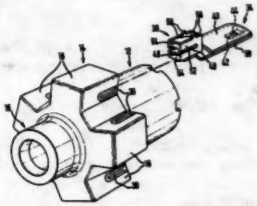
Georg Strobl, Hong Kong, Hong Kong, assignor to Johnson Electric Industrial Manufactory Limited, Chaiwan, Hong Kong

Filed Jan. 11, 1985, Ser. No. 690,761

Claims priority, application United Kingdom, Oct. 11, 1982, 8228952

Int. Cl.⁴ H02K *13/04*

U.S. Cl. 310—236 **7 Claims**



1. An armature comprising a winding having connector portions coated with insulation, a body having a commutator segment support and a housing section, and three or more commutator segments seated on said segment support and respectively connected to connector portions of said winding, in which:

said housing section includes three or more housings which are respectively formed with housing recesses for said commutator segments and with means for positioning said connector portions of said winding relative to each housing recess;

each said commutator segment comprising an integral terminal disposed within one of said housing recesses;

said terminal of each said commutator segment being provided with two cutting eges for cutting insulation on said connector portion positioned relative to said housing recess receiving said terminal, and a slot which straddles and grips said connector portion positioned relative to said receiving housing recess; and

said commutator segment support, said housing recesses, said connector portions, said terminals, said cutting edges and said slots are arranged so that said each commutator segment can be positioned on said body with a single translational movement, parallel to an axis of the slot in the commutator segment, in which said commutator segment is moved relative to said segment support and, at the same time, said cutting edges strip said insulation from the connector portion positioned relative to said housing and said slot establishes and maintains electrical contact by insulation displacement.

4,584,499

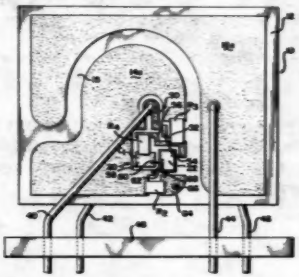
AUTORESONANT PIEZOELECTRIC TRANSFORMER SIGNAL COUPLER

Robert A. Leskovec, Richmond Heights; John M. Davenport, Lyndhurst, both of Ohio, and Orvar B. Burman, San Mateo, Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,480

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—318 **33 Claims**



1. A signal coupler comprising, in construction:

A. a piezoelectric transformer having a piezoceramic wafer to which are applied a pair of primary electrodes;

B. a drive circuit including an oscillator connected with said primary electrodes to apply an oscillating voltage across said wafer, said oscillator including feedback means connected with one of said primary electrodes for controllably tuning said oscillator such that the frequency of said oscillating voltage is maintained substantially equal to the characteristic anti-resonant frequency of said wafer.

4,584,500

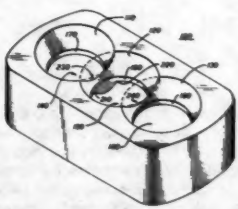
ELECTRON GUN INTEGRAL BEAM CORRECTORS IN A COLOR CATHODE RAY TUBE

James C. Day, Owensboro, Ky., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,507

Int. Cl.⁴ H01J *29/62*

U.S. Cl. 313—414 **6 Claims**



1. In an in-line electron gun structure for a color cathode ray tube, a lensing arrangement in the final focusing and accelerating electrodes comprising:

a first one-piece lensing structure in the forward portion of

the focusing electrode, such structure having a forward planar surface normal to the in-line plane, and defining three in-line apertures having axes of symmetry lying in the in-line plane, each aperture having a front beam exit defined by the forward planar surface, and a sidewall extending rearward from the forward plane to define a terminal rear beam entrance; and

a second one-piece lensing structure in the rear portion of the final accelerating electrode in adjacent, facing relationship with the first structure, such second structure having a rear planar surface normal to the in-line plane, and defining three in-line apertures having axes of symmetry lying in the in-line plane, each aperture having a rear beam entrance defined by the rear planar surface and a sidewall extending forward from the rear plane to define a terminal front beam exit; and

at least one pair of rounded tabular electron beam correctors extending from and integral with the sidewall defining the terminal beam entrance or exit of the central aperture of at least one of said first and second lensing structures, the correctors located in facing relationship and being about equi-distant from the axis of symmetry of the aperture.

4,584,501

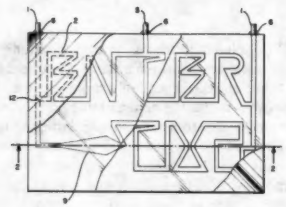
FLAT PLATE LUMINOUS DISPLAY DEVICE

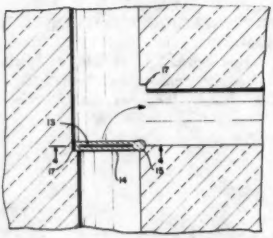
Franklin H. Cocks, 5 Learned Pl.; Phillip L. Jones, 415 Clarion Dr., both of Durham, N.C. 27705, and James P. Schaffer, 3639 Shrewsbury Dr., Durham, N.C. 27707

Filed Jun. 27, 1984, Ser. No. 625,109

Int. Cl.[4] H01J *61/33*; G09F *13/18*

U.S. Cl. 313—493 **5 Claims**





1. A gas-discharge display device which comprises a glass plate into which is cut at least one continuous channel, said channel being terminated at both its ends by electrodes for the production of a gas-discharge and provided with a tubulated access port for the purpose of evacuating and backfilling, and a glass top cover which converts the said continuous channel into a continuous tube, said plates being sealed together by heating and said electrodes and tubulated access port being hermetically sealed using a low vapor pressure sealing medium which adheres in a hermetic fashion to both the top and bottom plates, said continuous channel being of constant cross-sectional area but is broadened and made shallow so that the gas-discharge display characters are thereby made of varying width but of constant electrical impedance per unit length.

5. A gas-discharge display device which contains at least one interior mechanical gate to control the impedance path to direct the luminous gas-discharge through a particular portion of an interconnected set of gas-discharge channels, said interior mechanical gate comprising a magnetic plate embedded in an electrically insulating envelope fitted with a pivot which fits into blind holes such that the gate can be rotated by means of an external magnet to rest in position against a seating ledge to control the impedance and extinguish the gas-discharge in a portion of said interconnected channel.

4,584,502

ELECTRIC INCANDESCENT LAMP

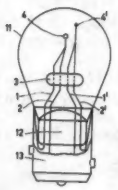
Manfred Kiesling, Würselen, Fed. Rep. of Germany, and Volker Kuhnert, Kerkrade, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 671,808, Nov. 15, 1984, abandoned, which is a continuation of Ser. No. 553,424, Nov. 21, 1983, abandoned, which is a continuation of Ser. No. 294,865, Aug. 21, 1981, abandoned. This application Jul. 2, 1985, Ser. No. 753,349

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034595

Int. Cl.[4] H01J *7/44*

U.S. Cl. 315—64 **21 Claims**



1. An electric incandescent lamp for operation in an environment producing vibration in a given direction perpendicular to a lamp holder axis, comprising

a lamp envelope defining an envelope axis, and having a pinch seal,

at least one helically wound substantially rectilinear filament disposed within said envelope, defining a filament axis, said filament axis being perpendicular to said envelope axis, and said filament and envelope axes defining a filament plane in which the filament axis lies and which is parallel to said envelope axis,

at least first and second current supply conductors which pass through said pinch seal and are connected to and support said at least one filament, said current supply conductors defining a first plane where they pass through the pinch seal, said filament plane having a given orientation with respect to said first plane,

an electrically insulating member disposed within said envelope and spaced from said pinch seal, said current supply conductors passing through said member between the pinch seal and the filament, said member being fixed to and supported by said conductors, portions of said current supply conductors and said insulating member thereby functioning as a mount for supporting said filament; and

a lamp cap fixed to said envelope, for mounting the lamp in a lamp holder with the envelope axis parallel to a lamp holder axis, and comprising means for cooperating with the lamp holder to orient the cap in not more than two predetermined angular positions about the lamp holder axis, said predetermined positions being 180° apart and selected such that said filament plane is perpendicular to said given direction of vibration,

characterized in that between the insulating member and the filament said first and second conductors are twisted

through an angle of at least 45° with respect to each other about the envelope axis, and

said filament plane makes an angle between 45° and 135° with respect to said first plane.

4,584,503

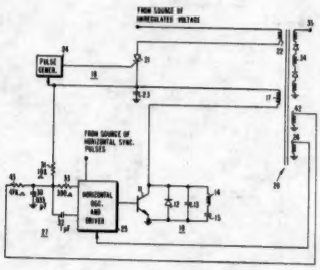
PHASE CORRECTION ARRANGEMENT FOR DEFLECTION CIRCUIT

Harry Pan, Shin Chuang, Taiwan, assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 23, 1984, Ser. No. 573,878

Int. Cl.⁴ H01Q *1/00*

U.S. Cl. 315—370 **5 Claims**



1. A deflection circuit for a video display apparatus comprising:

a source of line rate synchronizing pulses of a video signal;

deflection means for generating line rate deflection current;

sawtooth signal generating means for generating a line rate sawtooth signal;

a phase detector having said sawtooth signal applied to an input thereof for detecting the phase difference between said line rate synchronizing pulses of said video signal and said deflection current and having an output coupled to said deflection means for establishing a predetermined timing relationship between said deflection current and said line rate synchronizing pulses, said deflection circuit subject to distorted operation under high circuit loading conditions such that the timing relationship between said deflection current and said line rate synchronizing pulses is subject to deviation;

a source of a line rate correction signal having a characteristic indicative of the degree of said distorted operation; and

means for applying said line rate correction signal to said sawtooth signal generating means for modifying said sawtooth signal to vary in accordance with the degree of said distorted operation in a manner which alters said phase relationship between said line rate synchronizing pulses and said deflection current such that said deviation is corrected.

4,584,504

INTEGRATED CIRCUIT FOR DRIVING A D.C. MOTOR HAVING OPERATIONAL MODES

Bang W. Lee, SuWon, and Sung I. Hong, YangPyonKun, both of Rep. of Korea, assignors to Samsung Semiconductor and Telecommunications Co., Ltd., KyoungSangBukDo, Rep. of Korea

Filed Sep. 11, 1984, Ser. No. 649,280

Claims priority, application Rep. of Korea, May 10, 1984, 84-2520[U]

Int. Cl.⁴ H04Q *7/02*

U.S. Cl. 318—16 **6 Claims**

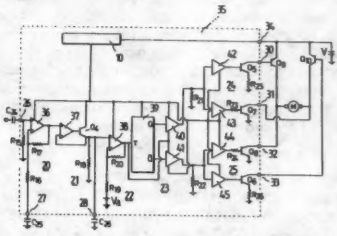
1. An integrated circuit for driving a d.c. motor, comprising:

radio signal receiving means for producing an output signal indicative of at least one radio signal, said receiving means connected to receive radio signals from a radio transmitter;

an amplifier circuit for amplifying the output signal from the receiving means, said amplifier circuit having a frequency range including audio frequencies;

peak detector means for converting the output signal of the amplifier circuit into a d.c. output voltage;

a comparator circuit for filtering stray electrical pulses, said comparator circuit receiving the output voltage of the peak detector means and producing a filtered output voltage, and having a hysteresis characteristic that depends on the magnitude of said filtered output voltage;



direction control means for generating first and second logic output signals from the filtered output voltage of the comparator circuit, said direction control means including first and second directional control circuits;

first and second motor driving means for producing an output including first and second motor driving signals in response to the logic output signals of the direction control means, said motor driving means connected in parallel with said directional control circuits;

a d.c. motor connected to receive the output of the direction control means and arranged to be driven in either direction or stopped in response thereto and

a voltage regulating circuit for supplying a stabilized voltage to all circuit components.

4,584,505

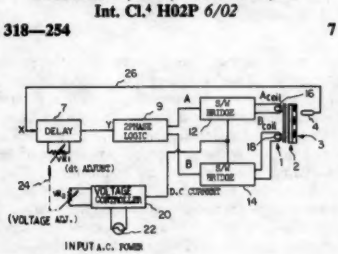
TORQUE-SPEED CONTROL SYSTEM FOR ASYNCHRONOUS D.C. BRUSHLESS MOTOR

Yeongchoon Chung, 703-20, Jisandong, Dongku, Kwangjushi Jeonranamdo, Rep. of Korea, and Myunghwan Kim, 2387 N. Triphammer Rd., Ithaca, N.Y. 14850

Filed Jun. 14, 1984, Ser. No. 620,586

Int. Cl.⁴ H02P *6/02*

U.S. Cl. 318—254 **7 Claims**



1. A controller for a brushless two-phase motor including a rotor and a stator having first and second windings defining stator poles, comprising:

a binary code marking on said rotor, said code marking corresponding to said rotor poles;

sensor means stationary with respect to said stator for detecting the logic level of said binary code marking upon rotation of said rotor to produce feedback control pulses

having a frequency corresponding to the speed of said rotor;

a source of D.C. drive current for said motor, said source including voltage control means and first adjustable means for varying the voltage produced by said voltage control means;

first and second switching means for supplying drive currents of selected polarities to said first and second stator windings, respectively;

delay circuit means responsive to said feedback control pulses to provide corresponding delayed control pulses;

second adjustable means for varying the delay provided by said delay circuit means; and

two-phase logic means responsive to said delayed control pulses to produce first and second phase control signals for selecting the polarities of the drive currents supplied to said first and second stator windings, said first and second adjustable means being coupled so that variations in the voltage produced by said voltage control means are inversely proportional to the variations in the delay provided by said delay circuit means.

4,584,506

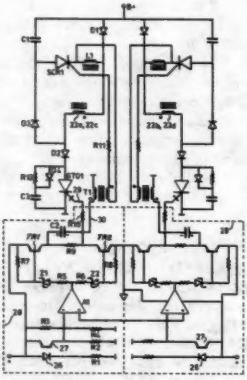
RELUCTANCE MOTOR WITH ELECTRONICALLY CONTROLLED STATOR WINDINGS

John Kaszmann, Willowdale, Canada, assignor to Polestar Magnetronics Inc., Willowdale, Canada

Filed Nov. 23, 1984, Ser. No. 674,429

Int. Cl.[4] H02P 8/00

U.S. Cl. 318—254 **9 Claims**



1. In an electric motor having a stator with multiple sequentially energizable phase windings and a rotor magnetized to seek a minimum reluctance position within a progressively moving electromagnetic field produced by said phase windings, first controlled switching means in series relative to a D.C. power supply with each phase winding, and means to control said first switching means to produce said progressively moving electromagnetic field, the improvement wherein (a) a charge storage capacitor is provided for each such phase winding, with one terminal of said capacitor connected by a low impedance path to said supply, and the other terminal having first and second connections establishing alternative low impedance paths to opposite ends of the winding, the first such connection being established by first diode means to that end of the winding connection to the first switching means, the first diode means being oriented to permit low impedance passage to said capactior of forward current continuing in said winding after turn-off of the switching means, and the second such connection being established by second controlled switching means, (b) means are provided to turn on said second switching means substantially simultaneously with said first switching means to provide low impedance passage of current from said capacitor to said end of the winding remote from the first switching means, and (c) second diode means are provided between the supply and said remote end of the winding such as to present a low impedance path for forward current from the supply, but a high impedance to reverse current.

4,584,507

MOTOR SPEED CONTROL ARRANGEMENT

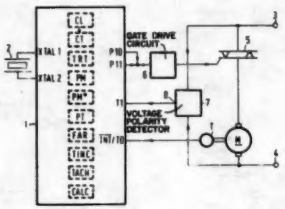
Clive R. Taylor, London, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 26, 1984, Ser. No. 654,835

Claims priority, application United Kingdom, Sep. 28, 1983, 8325897

Int. Cl.[4] H02P 5/00, 5/40

U.S. Cl. 318—327 **15 Claims**



1. A motor speed control arrangement for controlling the motor speed in dependence upon the difference between the actual speed of the motor, as represented by the periodicity of signals from a tachogenerator driven by the motor, and the required speed, by controlling the phase angle at which a controlled semiconductor switch is fired in each half-cycle of a mains voltage supply by the control arrangement, the switch being connected in series with the motor across the mains voltage supply, said arrangement comprising, a programed digital data processing system which includes a clock-driven cycling counter having a cycle frequency which is a plurality of times the frequency of individual half-cycles of the mains voltage supply, said counter supplying an interrupt signal each time it overflows, first storage means for storing a number representative of the time elapsing between the arrival instants of a first and a subsequent second tachogenerator signal, second storage means for storing a number representative of the time which would elapse between the first and second tachogenerator signals if the motor were running at the required speed, and third storage means for receiving a number determined by the firing period from the beginning of a mains half-cycle to the instant in that half-cycle at which the switch is required to be fired in order to provide the appropriate speed control, said system being programed to (a) respond to the arrivals of the first and second tachogenerator signals by reading the contents of the counter at the relevant instants, (b) respond to at least some of said interrupt signals to adjust the content of the first storage means such that said content eventually depends upon the values of the counter contents so read and the number of counts executed by the counter between the interrupt immediately following the occurrence of the first tachogenerator signal and the interrupt immediately preceding the occurrence of the second tachogenerator signal thereby to represent the period between said instants, (c) calculate said firing period in dependence upon the contents of the first and second storage means when the content of the first storage means represents the period between said instants, (d) store a number determined by a firing period calculated in an operation (c) in said third storage means, (e) respond to the occurrence of each zero-crossing in the mains voltage waveform by, each time a said interrupt signal occurs thereafter, decrementing a number stored in the third storage means in an operation

(d) by an amount corresponding to the number of counts executed by the counter since the immediately preceding interrupt occurred or, in the case of the first said interrupt after said subsequent zero-crossing, since that zero-crossing occurred, until the number stored in the third storage means becomes smaller than that which corresponds to a complete cycle period of the counter, (f) respond further to the interrupt signal which results in the number stored in the third storage means becoming smaller than that which corresponds to a complete cycle period of the counter by setting the counter content to a value determined by the difference between the then value of the number stored in the third storage means and the total counter capacity, and (g) respond to the occurrence of the next said interrupt signal to generate a fire conrol signal for said switch.

4,584,508

RAIN SENSOR IN AN AUTOMATIC WIPER DRIVE CONTROL SYSTEM FOR AN AUTOMOTIVE VEHICLE

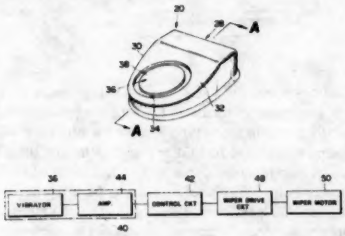
Kyoji Kobayashi, Chigasaki; Masaru Kato, Hiratsuka; Koichi Fujisawa, Samukawamachi; Yoshinori Nagamine, Fujisawa, and Fumio Nakajima, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited and Jidosha Denki Kogyo Kabushiki Kaisha, both of Yokohama, Japan

Filed Jan. 26, 1984, Ser. No. 574,271

Claims priority, application Japan, Jan. 28, 1983, 58-11486

Int. Cl.[4] G01W *1/14*; B60S *1/08*

U.S. Cl. 318—483 **38 Claims**



1. A rain sensor for detecting rain conditions to produce a rain condition indicative signal which varies according to detected rain conditions, comprising:

a sensor housing;

a vibrator suspended within said sensor housing and having a sensor surface exposed to the atmosphere so as to be accessible to rain drops, said vibrator being adapted to vibrate at an amplitude corresponding to the energy applied to said sensor surface by the impact of rain drops to produce said rain condition indicative signal having an amplitude corresponding to said vibration amplitude; and

a resilient member fixed to the outer periphery of said vibrator and resiliently supporting said vibrator within said sensor housing for facilitating vibration of said vibrator when rain drops impinge upon said sensor surface.

22. A rain sensor for an automotive wiper control system, comprising:

an essentially hollow sensor casing adapted to be fixed to a vehicle body at a position at which rain falls in approximately the same manner as it does at the front windshield;

a vibrator plate suspended for independent vibration within said sensor casing and having a sensor surface exposed to the atmosphere for receiving rain drops thereon, said vibrator plate vibrating at an amplitude and frequency corresponding to the energy applied to the sensor surface by the impact of rain drops;

a vibration sensitive element associated with said vibrator plate for vibration therwith, said vibration sensitive element producing an electrical signal representative of the vibration of said vibrator plate;

a resilient suspension member fixed to said sensor casing and said vibrator plate for resiliently supporting said vibrator plate with said vibration sensitive element while allowing vibration thereof in response to the impact of rain drops; and

a sensor circuit housed within said sensor casing and adapted to output a rain condition indicative signal which varies in accordance with the signal produced by said vibration sensitive element.

4,584,509

METHOD OF DISCRIMINATING PRESENT POSITION REGION OF A MACHINE

Nobuyuki Kiya, Hschioji, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

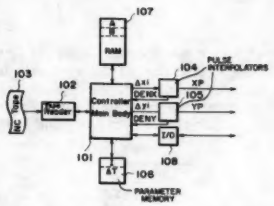
PCT No. PCT/JP83/00415, § 371 Date Jul. 18, 1984, § 102(e) Date Jul. 18, 1984, PCT Pub. No. WO84/02100, PCT Pub. Date Jun. 7, 1984

PCT Filed Nov. 17, 1983, Ser. No. 634,109

Claims priority, application Japan, Nov. 19, 1982, 57-203434

Int. Cl.[4] G05B *19/24*

U.S. Cl. 318—571 **3 Claims**



1. A machine present position region discrimination method utilized by a numerical control system which performs a numerical control operation based on a present position of a movable portion of a machine having a travelling direction, the machine present position region discrimination method comprising the steps of:

(a) dividing a stroke of substantially all possible movement along a controlled coordinate axis into n equal parts to partition the stroke into n regions, each of the regions having an interval length;

(b) assigning a region number to each of the regions;

(c) accumulating a travelled distance of the movable portion of the machine across the regions;

(d) performing one of incrementing and decrementing the present position region number by the interval length in dependence upon the travelling direction of the movable portion of the machine, when the travelled distance exceeds a range bounded by zero and the interval length; and

(e) delivering a present position region signal, which is indicative of the present position region of the movable portion of the machine, from the numerical control system to the machine.

4,584,510

THUMB-ACTUATED TWO-AXIS CONTROLLER

Richard H. Hollow, Sunnyvale, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

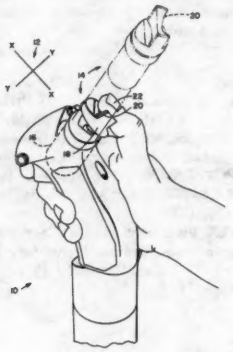
Filed Sep. 8, 1982, Ser. No. 415,878

Int. Cl.[4] G05D *1/08*

U.S. Cl. 318—584 **28 Claims**

1. A two-axis controller which produces at least an output signal in relation to pivotal displacement of a member with respect to an intersection of the two axes, which comprises a

support and a member pivotally movable on a support with respect to the two axes, said support comprising a plate portion surrounding an elevated portion having a centrally disposed aperture and said member being in pivotal contact with said plate portion, a light source mounted on said pivotally mov-



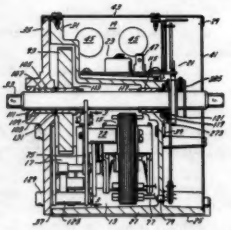
able member above the aperture to direct light through the aperture at the intersection of the two axes to receive light from said light source directed through the aperture, a light sensor producing at least one output signal related to a location on said sensor at which the light from said light source strikes the sensor.

4,584,511

CONTROLLABLE ROTARY ACTUATOR

George Rudich, Jr.; Charles F. Beeson, both of Goshen; Gary L. Bartley, Elkhart, and Terry A. Heckenbach, Middlebury, all of Ind., assignors to Johnson Service Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 469,928, Feb. 25, 1983, Pat. No. 4,554,496. This application Jul. 9, 1984, Ser. No. 629,008
The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.
Int. Cl.[4] G05B *19/26*
U.S. Cl. 318—600 **6 Claims**



1. A motor-driven rotary actuator including:

an AC electric drive motor configured for providing one of a plurality of output torques, said motor being capable of providing substantially the same output torque for either direction of motor rotation;

power transmission means having a predetermined unchangeable gearing ratio and including a rotatable output shaft, said transmission means being coupled to said drive motor and including drive elements formed of disparate materials selected for transmitting one of said output torques, each of said drive elements having a gear tooth angular width which is substantially constant irrespective of the output torque for which said motor is configured;

electric control means coupled to said motor for providing rotation positioning control of said output shaft in response to addressably coded digital command signals received at said control means along a two wire bus and including means for generating a feedback signal representative of the actual angular position of said output shaft, means for selecting an address signal to which said control means will be responsive and means for generating an error signal representative of the difference between the actual position and a desired position of said output shaft;

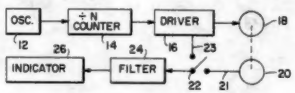
said control means further including interface means for attenuating spurious electrical noise and converter means coacting with microcomputer means for providing a clocked pulse signal representative of the position of said output shaft.

4,584,512

MICROSTEPPING DRIVES WITH WAVEFORM TUNING AND MICROPROCESSOR CONTROL

Eric K. Pritchard, 1702 Plymouth Ct., Bowie, Md. 20716

Continuation-in-part of Ser. No. 318,621, Nov. 5, 1981, which is a division of Ser. No. 125,297, Feb. 27, 1980, Pat. No. 4,302,712.
This application Dec. 7, 1983, Ser. No. 558,836
Int. Cl.[4] H02P *8/00*
U.S. Cl. 318—696 **76 Claims**



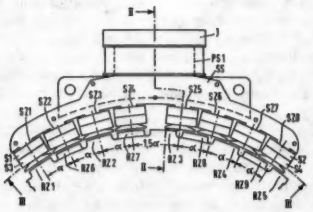
1. A drive system for a stepping motor having a plurality of windings comprising: means for energizing said windings in response to position command signals; a plurality of adjustment means connected to said energizing means for adjusting segments of said position command signal, each of said adjustment means controlling the amplitude of a plurality of said segments, and at least one of said adjustment values controls some but not all of said segments of a position command signal.

4,584,513

MOTOR/GENERATOR OPERATING ON THE RELUCTANCE PRINCIPLE

Werner Freise, Kaiserslautern, and Herbert Fischer, Weisenheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Sep. 8, 1983, Ser. No. 530,300
Int. Cl.[4] H02P *7/36*; H02K *7/02*
U.S. Cl. 318—701 **2 Claims**



1. In a motor/generator with flywheel rotor operating on the reluctance principle, having a stator with independent sector stators distributed over the circumference of the rotor at tangential distance from each other; each sector stator having at least two similarly toothed sector stator elements arranged at an axial spacing and with axially aligned teeth one behind the other, with working windings in the grooves between the

teeth and commutated via an electronic switching device; the teeth of each sector stator element being enveloped singly; each sector stator terminating in a radially projecting pole shank, which is enveloped by a concentrated exciter winding part; the pole shanks of two sector stator elements of a sector stator arranged axially one behind the other are excited in the sense of opposite polarity and are axially connected on the outside by a flux return yoke; and a rotor provided with rows of teeth uniformly distributed over its circumference and connected for magnetic conduction, each having a pitch concording with double the pitch of a sector stator element, in such a way that each stator tooth row has a rotor tooth row correlated to it, the improvement comprising said switching device having MOS transistors for electronic switching elements for switching a working winding with at least four winding phases on and off, wherein pairs of said winding phases fed in phase opposition are magnetically coupled together, and the current path to the current bypass of said winding phase just switched off is provided via an inverse diode of said MOS transistor for said winding phase which is magnetically coupled with said winding phase just switched off and is electrically offset to it by 180°.

4,584,514

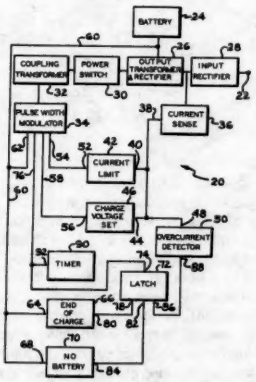
HIGH FREQUENCY SWITCHING BATTERY CHARGER

Henry Kaminski, Broomall, Pa., assignor to Allied Corporation, Morris Twp., Morris County, N.J.

Continuation of Ser. No. 496,773, May 20, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 713,565

Int. Cl.⁴ H02J 7/04

U.S. Cl. 320—33 **16 Claims**



1. A power supply for charging a storage battery, comprising:

power supply means adapted to be connected to a source of electrical energy for supply power;

rectifying means operatively connected to said power supply means for rectifying the supplied power;

output transformer means operatively connected to said rectifying means and to said battery for transforming said rectified power;

power switching means operatively connected to said output transformer means for controlling a flow of current from said rectifying means through said output transformer means;

pulse width modulator means operatively connected to said power switching means for controlling said power switching means, with a coupling transformer interposed between said pulse width modulator means and said power switching means;

current sensing means for sensing said flow of current through said output transformer means;

current limiting means responsive to said current sensing means and operatively connected to said pulse width modulator means for controlling said pulse width modulator means;

charging voltage control means responsive to said current sensing means and operatively connected to said pulse width modulator means for controlling said pulse width modulator means;

latch means for stopping said pulse width modulator means operatively connected to said pulse width modulator means;

overcurrent sensing means responsive to said current sensing means operatively connected to said latch means for controlling said latch means;

means for sensing the absense of said storage battery operatively connected to said latch means for controlling said latch means; and

end-of-charge sensing means operatively connected to a terminal of said battery and to said latch means for controlling said latch means responsive to a predetermined voltage present at said terminal.

4,584,515

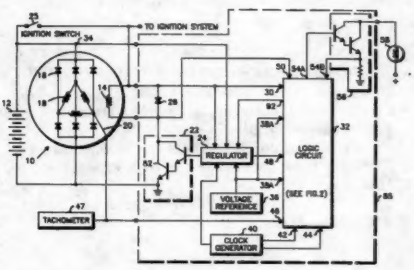
RE-REGULATION CIRCUIT FOR AUTOMOBILE TACHOMETER DETECTION CIRCUIT

Arthur J. Edwards, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 31, 1984, Ser. No. 687,604

Int. Cl.⁴ H02J 7/14

U.S. Cl. 322—28 **9 Claims**



1. A re-regulation circuit as for use with a vehicle alternator/charging system and comprising:

regulator means for producing a first control signal for controlling the excitation current of said alternator;

first detection means coupled to said alternator/charging system for detecting that the output of said alternator is lower than a predetermined level;

first logic means coupled to the first detection means for providing a second control signal in response to said detection for controlling the excitation current of said alternator;

fault detection means coupled to said alternator/charging system for providing a fault signal in response to detection of an actual fault in said system;

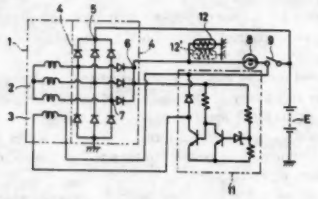
second logic means coupled to the first logic means and the fault detection means for disenabling said second control signal in response to said fault signal; and

means coupling said second control signal to the regulator whereby the second control signal is combined with the first control signal.

4,584,516
CHARGE DISPLAY CIRCUIT

Yoshiyuki Iwaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,751
Claims priority, application Japan, Jun. 28, 1983, 58-101878[U]
Int. Cl.[4] H02J 7/14
U.S. Cl. 322—99 3 Claims

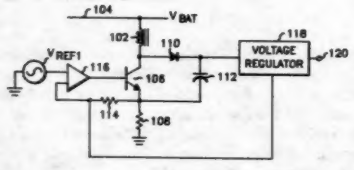


1. A charge display circuit comprising:
an AC generator having an output winding assembly;
a rectifier circuit having first and second DC output terminals and an AC input terminal connected to said output winding assembly;
means for connecting said first DC output terminal to one terminal of a battery to charge said battery;
a key switch;
a charge display lamp connected through said key switch between said second DC output terminal of said rectifier circuit and said one terminal of said battery; and
a resistor having a positive temperature coefficient connected between a connecting point of said charge display lamp and said second DC output terminal and a ground terminal.

4,584,517
SELF-OSCILLATING DC-DC SWITCHING VOLTAGE REGULATOR

Walter Schwob, Commugny, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 13, 1984, Ser. No. 620,240
Claims priority, application United Kingdom, Jun. 16, 1983, 8316352
Int. Cl.[4] H02M 3/142
U.S. Cl. 323—222 6 Claims

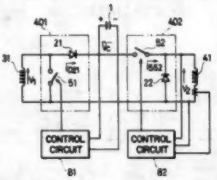


1. A DC-DC converter comprising:
an inductance for connection at one terminal to a source of DC voltage to be converted;
switch means connected to another terminal of the inductance for controlling the passage of current through the inductance;
a rectifier having an input connected to the other terminal of the inductance and having an output connected to the output of the converter;
a capacitance connected to the output of the rectifier to smooth the voltage thereat;
control means connected to the switch means for controlling the operation thereof in dependence on the voltage at the capacitance to produce a desired converter output voltage, and
voltage sensing means coupled between the capacitor and the control means,
characterized in that
the capacitance has a first electrode connected to the output of the rectifier and a second electrode connected to a side of the switch means remote from the inductance,
said control means comprises a first comparator having a first input connected to a first source of reference potential, a second input connected to the second electrode of the capacitance and an output connected to a control input of the switch means, and
said voltage sensing means has a first terminal coupled to the second electrode of the capacitor and to the second input of the comparator and has a second terminal coupled to a second source of reference potential.

4,584,518
CIRCUIT FOR TRANSMITTING ENERGY TO AND FROM COILS

Shigenori Higashino; Yoshiro Shikano, and Kanji Katsuki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1983, Ser. No. 473,405
Claims priority, application Japan, Mar. 9, 1982, 57-38914
Int. Cl.[4] G05F 1/00
U.S. Cl. 323—224 5 Claims



1. A circuit for transmitting energy to and from coils, comprising; a capacitor, a first transmitting circuit and a second transmitting circuit coupled in parallel with respect to each other, each of said transmitting circuits including first and second series circuits each having a switch and a diode, each of said transmitting circuits being completed by connecting one end of a coil to a point at which the switch and diode in said first series circuit have been connected together, and connecting the other end of said coil to a point where the switch and diode in said second series circuit have been connected together, in order to release energy through an array including a diode and to absorb energy through an array including a switch and a coil, means for controlling the quantity of the energy transmitted to the coil so as to make constant the current and polarity of said capacitor, said controlling means including means controlling the on-off operation of the switch in said first transmitting circuit and the on-off operation of the switch in said second transmitting circuit.

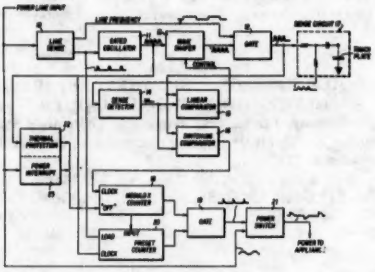
4,584,519
INCREMENTAL TOUCH-OPERATED SWITCH

Victor Gruodis, River Vale, N.J., assignor to Neris Coal Export Co., Inc., New York, N.Y.

Filed Feb. 21, 1985, Ser. No. 703,747
Int. Cl.[4] H05B 37/02
U.S. Cl. 323—245 20 Claims

17. An apparatus for controlling the application of an AC voltage to a load, comprising:
means for producing a reference pulse train with a pulse duration set by the amplitude of a control voltage;
a sense circuit for altering the individual pulses of said reference pulse train as a function of a physical occurrence;

means for providing a sense signal when the output of said sense circuit changes;
means for providing said control voltage as a function of said sense signal and said reference pulse train;
means for providing a clock pulse in response to a relative difference in pulse width between said sense signal and said reference pulse train;
means for providing a first gate enabling pulse;



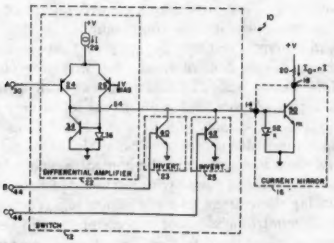
means incremented by said clock pulse for producing a second gate enabling pulse and incrementing said means for providing said first gate enabling pulse;
switch means for controlling the application of said AC voltage to said load; and
means for turning on said switch means during the simultaneous occurrence of said first and second gate enabling pulses.

4,584,520

SWITCHABLE CURRENT SOURCE CIRCUITRY HAVING A CURRENT MIRROR AND A SWITCHING TRANSISTOR COUPLED IN PARALLEL

Charles L. Vinn, Milpitas, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 12, 1984, Ser. No. 588,463
Int. Cl.[4] H03F 3/45
U.S. Cl. 323—316 **10 Claims**



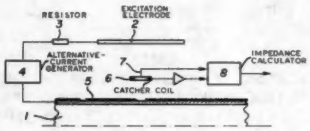
1. A switchable current source circuit comprising:
a current mirror; and,
switch means, including a current source, coupled to the current mirror for enabling, or disabling, current from the current source to pass to an input of the current mirror selectively in accordance with a control signal fed to such switch means, such switch means including a transistor having the emitter and collector thereof coupled in parallel with the current mirror, the base of the transistor being fed by the control signal, and wherein in response to one level of the control signal, such switch means places the transistor in a non-conducting condition between the collector and emitter to enable the current from the current source to pass to the input of the current mirror, such current mirror producing an output current through a load coupled thereto with a level proportional to the current produced by the current source, while in response to a second level of the control signal, such switch means places the transistor in a conducting condition between the emitter and collector and current from the current source passes through the emitter and collector of the transistor to prevent such current from the current source from passing to the input of the current mirror, such current mirror thereby being prevented from producing the output current through the load.

4,584,521

METHOD OF DETECTING THE DEFECTS IN A DIELECTRIC COATING AT THE SURFACE OF AN ELECTRICALLY CONDUCTIVE UNDERLAYER

Jacques V. Gaud, Perly, and Michel Kornmann, Grand-Lancy, both of Switzerland, assignors to Battelle Memorial Institute, Geneva, Switzerland

PCT No. PCT/CH82/00109, § 371 Date Jun. 15, 1983, § 102(e) Date Jun. 15, 1983, PCT Pub. No. WO82/01514, PCT Pub. Date Apr. 28, 1983
PCT Filed Oct. 11, 1982, Ser. No. 514,813
Claims priority, application Switzerland, Oct. 16, 1981, 6619/81
Int. Cl.[4] G01R *31/00, 31/12*
U.S. Cl. 324—54 **2 Claims**

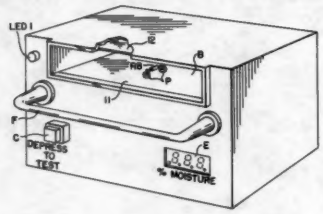


1. A method of detecting defects in a dielectric coating on the surface of electrically conductive pipe adapted to serve as a submerged pipeline, comprising the steps of:
feeding said pipe substantially continuously below the surface of a body of water through a submerged zone above a floor of said body of water and below the surface of said body of water;
spacedly juxtaposing said pipe with an excitation electrode extending only along said zone with said pipe in said body of water so that said pipe moves progressively past said excitation electrode through said zone;
applying an alternating current across said pipe and said excitation electrode;
disposing between said electrode and said pipe in said body of water at least one ferrite-core toroidal current sensing coil with a plane of said coil substantially perpendicular to a perpendicular from said surface of said pipe whereby said coil measures electric current passing substantially along said perpendicularly between said pipe and said electrode;
providing a potential detecting electrode in an opening of said coil; and
calculating the impedance of an electric current path between said surface of said pipe and said excitation electrode in response to the current measured by said coil and electrical potential detected by said potential detection electrode.

4,584,522
DIGITAL DIRECT READING GRAIN MOISTURE TESTER

Marco E. Varela, Boardman, Ohio, assignor to Electrex, Inc., Aurora, Ohio

Filed Aug. 11, 1983, Ser. No. 522,027
Int. Cl.[4] G01R *27/26*
U.S. Cl. 324—61 R **10 Claims**

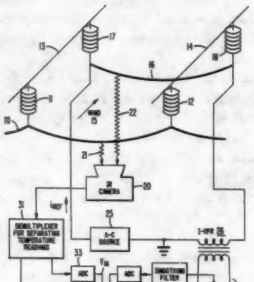


1. Apparatus for directy measuring the moisture content of particulate material comprising a casing having a top well provided with an opening to a receptacle adapted to receive said particulate material with parallel electrode plates defining two opposite sides of said receptacle and forming a capacitor, an oscillator means having an output with a charging half cycle and a discharging half cycle, detector means determining the capacitance between said electrode plates comprising a capacitor charging path having a first given resistance and a diode forward biased in the charging half cycle and reverse biased during the discharging half cycle; a capacitor discharging path having a second given resistance different from said first given resistance and a diode forward biased in the discharging half cycle and reverse biased in the charging half cycle; and, an output voltage proportional to the charge retained on said electrode plate; and means converting said detector output to a visually pereceptable form.

4,584,523
MEASUREMENT OF THE CURRENT FLOW IN AN ELECTRIC POWER TRANSMISSION LINE BY DETECTION OF INFRARED RADIATION THEREFROM

Hammam Elabd, East Windsor, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 3, 1983, Ser. No. 538,548
Int. Cl.[4] G01R *31/00*
U.S. Cl. 324—96 **4 Claims**



1. A method for measuring current in a transmission line comprising the steps of:

establishing a reference transmission line exposed to similar ambient conditions as the transmission line in which current is to be measured;

passing a measured current through said reference transmission line raising its temperature above ambient; and

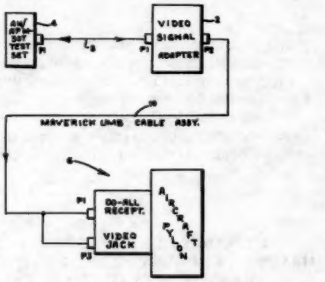
using at least one infrared detecting device to measure the temperatures of said reference transmission line and the transmission line in which current is to be measured;

computing, from said measured current and from the respective measurements of the temperatures of said reference transmission line and said transmission line in which current is to be measured, the current sought to be measured.

4,584,524
MISSILE CONTROL SYSTEM TEST APPARATUS HAVING VIDEO SIGNAL ADAPTER

John P. Tomany, Tampa, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 4, 1983, Ser. No. 520,386
Int. Cl.[4] G01R *31/02, 31/28;* **H04N** *7/00;* **G09G** *1/00*
U.S. Cl. 324—73 R **1 Claim**



1. In an apparatus for testing the performance of an airborne missile control system having a display scope, said apparatus including a programmable dynamic test set for generating control signals, for measuring system parameters of said missile control system and for providing a printed record of test results, the improvement therein comprising:

a video signal adapter electrically interposed between said test set and said missile control system for providing video signals to the display scope of said missile control system;

said video signal adapter having means for selectively providing a gray scale display signal, a resolution lines display signal and a movable crosshairs display signal in said missile control system in response to the control signals emanating from said test set, and means within said video signal adapter for adjusting the voltage levels of parameters received from said missile control system for processing by said test set;

said video signal adapter further including a master clock generator having a crystal controlled oscillator, a decade counter coupled to said oscillator, a staircase counter coupled to the output of said decade counter, and a line counter receiving output pulses from said staircase counter and providing mode control pulses to said staircase counter, and a sync generator receiving clock pulses from said crystal controlled oscillator and providing composite sync, composite blanking and vertical drive pulses for use in said video signal adapter;

said means for providing said gray scale display signal including a plurality of AND gates each having first and second input leads and an output lead, each of said AND gates having its first input lead connected to an output stage of said staircase counter and having its second input lead connected to a common terminal, said common terminal receiv-

ing clock pulses from said crystal controlled oscillator, each of said AND gates having its output lead resistively coupled to a common analog video line;

said means for providing said resolution lines display signal including first gating means interposed between said common terminal and said clock pulses, said first gating means being operative in response to resolution line control signals received from said dynamic test set;

said means for providing a movable crosshairs display signal including a first one-shot multivibrator adapted to provide vertical crosshair pulses in response to azimuth control signals from said missile control system and crosshair command signals from said dynamic test set, a second one-shot multivibrator adapted to provide horizontal crosshair pulses in response to elevation control signals from said missile control system and said crosshair command signals from said dynamic test set, and means for coupling said vertical and horizontal crosshair pulses to said first gating means whereby said clock pulses may be isolated from said common terminal during the time occurrences of said crosshair pulses;

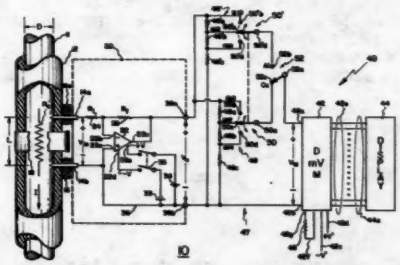
said means for adjusting the voltage levels of parameters received from said missile control system comprising a plurality of resistor divider networks.

4,584,525

CURRENT-SHUNT SYSTEM FOR KNOWN CONDUCTORS

John D. Harnden, Jr.; Henry A. F. Rocha, and Milton D. Bloomer, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,789
Int. Cl.[4] G01R *19/00, 1/067*
U.S. Cl. 324—126 14 Claims



1. Apparatus for measuring the magnitude of at least one of a DC current and an AC current flowing through a single conductor having a known one of a plurality of known, but different, characteristics, said single conductor being located within an insulative sheath, comprising:

means, comprising a pair of conductive contacts, for directly contacting the single conductor through said insulative sheath, at two points along the axial length thereof;

means for maintaining the contacting means at a fixed separation therebetween, to define a single conductor resistance providing, at said contacting means, a single voltage of magnitude directly proportional to the magnitude of current flowing through said single conductor;

amplifier means directly connected to said contacting means for actively buffering the voltage provided at said contacting means; and

means receiving only the buffered output voltage of said buffering means for providing a user-viewable display of the magnitude of the voltage;

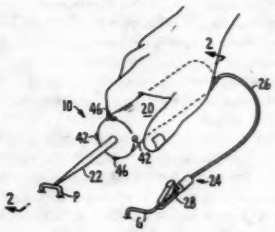
said buffering means being the only portion of said apparatus connected to said contacting means, and multiplying the voltage at said contacting means by a scale factor selected to cause said display means to display a value numerically equal to the magnitude of current then flowing through said conductor, and including: an operational amplifier having a non-inverting input connected to a first one of said contacts, an inverting input and an output; and a first resistance element of known magnitude having a first terminal connected to the inverting input and a second terminal connected to the remaining contact; and means for setting the scale factor to one of a like plurality of values, each selected to properly scale the voltage developed responsive to the known characteristics of the associated conductor, and including: a plurality of feedback resistance elements equal in number to the number of the plurality of different conductor characteristics to be accommodated, each feedback resistance element having a first terminal connected in parallel to one of said operational amplifier output and inverting input, and a second terminal; and switching means for connecting to the remaining one of said operational amplifier output and inverting input, the second terminal of that feedback resistance associated with the characteristics of the conductor being utilized.

4,584,526

COMBINATION CONTINUITY AND LIVE CIRCUIT PATH TESTER

George S. Lobastov, 462 17th Ave., San Francisco, Calif. 94121

Filed Jan. 28, 1983, Ser. No. 461,735
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—133 4 Claims



1. A combination continuity and live circuit path tester comprising:

an elongated generally cylindrical casing;

a conductive probe mounted at one end of said casing;

ground means connected to said casing;

first pair of light-emitting diodes connected in parallel to each other and in a manner to pass current between said probe and ground means;

second pair of light-emitting diodes connected in parallel to each other and in a manner to pass current between said probe and ground means in the opposite direction from said first pair, said light-emitting diodes being respectively disposed in four quadrants about the periphery of said casing with said first pair being disposed 180 degrees apart in two quadrants and said second pair being in the remaining two quadrants spaced 180 degrees apart; and

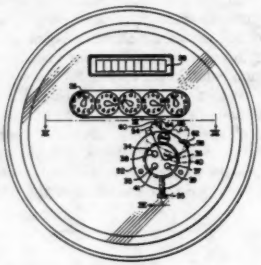
biasing means connected in series with and powering said second pair of light-emitting diodes, said biasing means and said second pair of light-emitting diodes being connected in parallel with said first pair of light-emitting diodes whereby in operation, said ground means is connected to a ground point in the circuit path to be tested and said conductive probe is placed in contact with another point in the circuit path, such that said first pair of light-emitting diodes will generate light if the circuit path is live, while said second pair of light-emitting diodes will generate light if the circuit path is continuous and no light will be generated if the circuit path is broken.

4,584,527

AC ELECTRIC ENERGY METER HAVING SHIELDED RADIATION RESPONSIVE DATA INTERFACE

Jorge L. Amigo, Durham, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 25, 1983, Ser. No. 479,065
Int. Cl.[4] G01R 11/04; H04B 9/00; G08C 9/06
U.S. Cl. 324—157 18 Claims



1. Electric power distribution apparatus, comprising:

a fixed data processing component coupled to an electric utility power distribution circuit for processing data related to said circuit, said fixed component comprising radiation responsive input means for receiving external data transmitted to said fixed component;

a cover attached to said fixed component, said cover providing protection for said fixed component while permitting transmission of radiation therethrough;

a portable data processing component for generating radiation modulated with data to be transmitted to said fixed component; and

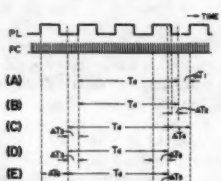
shutter means attached to said fixed component interiorly of said cover for preventing radiation transmitted through said cover from reaching said input means, said shutter means comprising means responsive to magnetic flux for selectively permitting transmission of radiation through said cover to said input means.

4,584,528

SPEED DETECTING METHOD AND APPARATUS

Tsutomu Ohmae; Toshihiko Matsuda, and Makoto Tachikawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 25, 1982, Ser. No. 352,083
Claims priority, application Japan, Feb. 28, 1981, 56-29271
Int. Cl.[4] G01P 3/48, 3/54; G04F 7/06
U.S. Cl. 324—166 10 Claims



1. A speed detecting apparatus comprising:

a pulse generator means for generating a first pulse each time a vehicle moves by a predetermined distance;

first counting means for counting the first pulses delivered from said pulse generator means;

oscillator means for generating a clock pulse with a constant frequency higher than the frequency of generation of said first pulse;

second counting means for counting the clock pulses delivered from said oscillator means;

interruption pulse generating means for generating an interruption pulse in synchronism with the generation of said first pulse;

timer means for generating a time interruption pulse each time a set time interval has lapsed; and

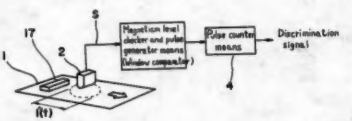
microprocessor means responsive to receipt of said interruption pulse and said time interruption pulse for calculating the speed of said vehicle on the basis of a count value of said first counting means during a time interval from when a pulse is generated by said pulse generator at or adjacent the measuring start point of said set time interval to when a pulse is generated by said pulse generator just before or after the end point of said set time interval and a count value of said second counting means during said time interval, said microprocessor means operating to control said interruption pulse generating means so as to selectively inhibit the generation of said interruption pulse.

4,584,529

METHOD AND APPARATUS FOR DISCRIMINATING BETWEEN GENUINE AND SUSPECT PAPER MONEY

Shuji Aoyama, Osaka, Japan, assignor to Bill Checker Co., Ltd., Osaka, Japan

Filed Jun. 14, 1983, Ser. No. 504,310
Claims priority, application Japan, Jun. 2, 1983, 58-100055; Jun. 3, 1983, 58-99696
Int. Cl.[4] G01R 33/00; B07C 5/344; G06F 7/04; G07D 7/00
U.S. Cl. 324—261 5 Claims



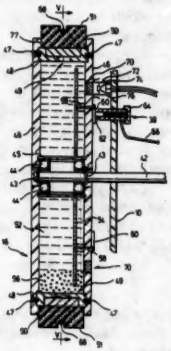
4. A paper money discriminating apparatus for discriminating between genuine or counterfeit, or suspect paper money printed in magnetic ink comprising a magnetic head for scanning and detecting magnetism contained in a print portion in a predetermined area of paper money to produce a magnetism detection signal, a window comparator for checking the level of the magnetism detection signal from the magnetic head in respect to a predetermined range ($V_o \pm n$) corresponding to a magnetic level of genuine money, said window comparator also converting the magnetism detection signal into first and second pulse signals from components thereof, respectively, within and without said predetermined range of magnetic level, first and second counter means for separately counting the number of pulses in said first and second pulse signals transmitted by the window comparator, said counting of such pulses being in respect to a predetermined range ($N_o \pm n$) corresponding to a pulse count value derived from genuine money, and control means responsive to the respective numerical outputs of said first and second counter means for controlling a discriminating function, whereby the paper money is judged to be genuine when the magnetism detection signal is both: (a) at a level within said predetermined range of magnetic level and (b) of a numerical value within said predetermined range of pulse count value.

4,584,530

ELECTROLYTE POTENTIAL MEASURING APPARATUS

John P. Nicholson, R.R. 5, Orangeville, Canada (L9W 2Z2)

Filed May 12, 1983, Ser. No. 494,068
Claims priority, application Canada, Feb. 28, 1983, 422490
Int. Cl.[4] G01N 27/42
U.S. Cl. 324—425 8 Claims



1. A wheel electrode for use with a device for making electrical surveys of structures contained in electrolyte, said wheel electrode comprising:

porous rim means including a dielectric rim structure having at least one recess in its axial surface and a plurality of apertures passing through the rim structure into the recess, and at least one porous member securable in said recess and having a predetermined rate of permeation whereby electrolyte solution provides a continuous conducting path through said porous members;

a chamber for containing the electrolytic solution which communicates with said porous rim means; and

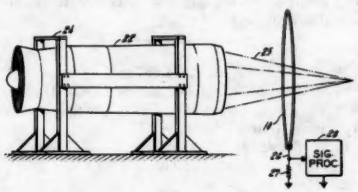
metal electrode means in said chamber in contact with the electrolytic solution for sensing electrolytic voltage potentials in said electrolyte.

4,584,531

NONCONTACT ELECTROSTATIC HOOP PROBE FOR COMBUSTION ENGINES

Robert P. Couch, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 4, 1982, Ser. No. 432,507
Int. Cl.[4] G01R 5/28, 29/12
U.S. Cl. 324—464 5 Claims



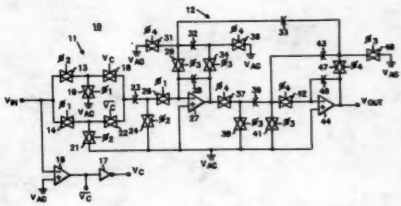
1. A noncontact electrostatic hoop probe adapted to sense the passage of electrostatic charge in a stream of exhaust gas effluent from an internal combustion engine, comprising a loop of electrical conductor closed upon itself to provide an electromagnetic short circuit, said loop having an internal least dimension sufficiently large to ensure spatial separation of said probe from substantially all components of a gas stream passing therethrough when in use so that there is no physical contact between the effluent and the loop.

4,584,532

SWITCHED CAPACITOR ENVELOPE DETECTOR

David W. Duehren, Boston, Mass., and Michael D. Smith, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 20, 1982, Ser. No. 420,145
Int. Cl.[4] H03K 5/00, 5/153, 5/22
U.S. Cl. 328—151 9 Claims



1. An envelope detector for providing an amplitude envelope of an input signal, comprising:

absolute value detection means having switching means and capacitance means, for providing an absolute value signal from said input signal by charging the input signal in response to the polarity of said input signal onto the capacitance means so that the absolute value signal always has the same polarity relative to a reference voltage; and

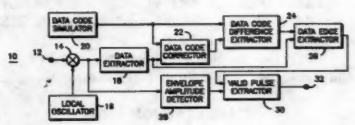
filter means selectively coupled to the absolute value detection means, for providing the amplitude envelope of the input signal by filtering the amplitude envelope of said absolute value signal.

4,584,533

NON-COHERENT BPSK DEMODULATOR

Greg M. Huffman, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1985, Ser. No. 707,345
Int. Cl.[4] H03K 9/10; H04L 27/22
U.S. Cl. 329—50 16 Claims



13. A method of demodulating a BPSK signal modulated with a predetermined received data code, said method comprising the steps of:

down-converting the BPSK signal to produce a BPSK modulated beat signal having a beat signal envelope;

removing the received data code from the beat signal to produce an extracted received data code;

correcting inverted portions of the extracted received code to produce a corrected received data code;

extracting differences between the corrected received code and a simulated data code to produce a difference signal;

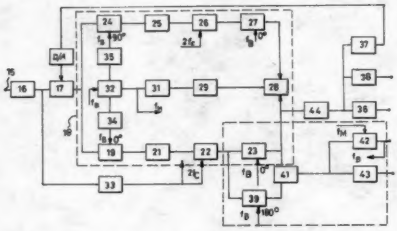
detecting when the amplitude of the absolute value of the beat signal envelope exceeds a predetermined level to produce a valid envelope signal; and

selectively extracting pulses from the difference signal in response to the valid envelope signal.

4,584,534
METHOD AND APPARATUS FOR DEMODULATING A CARRIER WAVE WHICH IS PHASE MODULATED BY A SUBCARRIER WAVE WHICH IS PHASE SHIFT MODULATED BY BASEBAND SIGNALS

Enno E. Lijphart, Bensheim, and Gerardus Drewes, Heppenheim, both of Fed. Rep. of Germany, assignors to Agence Spatiale Europeenne, Paris, France

Filed Sep. 6, 1983, Ser. No. 529,632
Claims priority, application France, Sep. 9, 1982, 82 15297
Int. Cl.[4] H03D *3/00*
U.S. Cl. 329—122 **16 Claims**

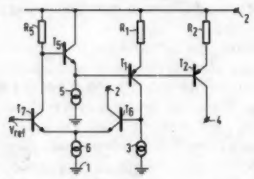


1. A method for demodulating a carrier wave which is phase modulated by a subcarrier wave which is phase shift modulated by baseband signals, according to which at least one phase demodulation process is performed using a Costas tracking loop to regenerate the carrier wave, wherein the baseband signals obtained are all subsequently sampled, then decoded, characterized by the fact that a carrier wave frequency is first converted to an intermediate frequency which is lower than the carrier wave frequency, that the subcarrier wave is extracted by a phase demodulation process using a modified Costas loop having a digital circuit portion comprising a waveform synthesizer by which the subcarrier is regenerated and matched digital filters, that digital sampling is then performed on the signal demodulated in said modified Costas loop at a frequency which is twice the frequency of the intermediate frequency and that a bit clock frequency is regenerated in a first order phase locked loop wherein the subcarrier wave frequency is used as a reference frequency in regeneration of said bit clock frequency.

4,584,535
STABILIZED CURRENT-SOURCE CIRCUIT

Evert Seevinck, Delden, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 19, 1984, Ser. No. 622,349
Claims priority, application Netherlands, Jun. 22, 1983, 8302215
Int. Cl.[4] H03F *3/45*
U.S. Cl. 330—257 **5 Claims**



1. A current source circuit arrangement having a first terminal, a second terminal and a common terminal, which comprises:

a first current path extending between said first terminal and said common terminal and comprising the series connection of a current source and the collector-emitter path of a first bipolar transistor, said current source being connected to said collector-emitter path at a first junction;

a second current path extending between said second terminal and said common terminal and comprising the collector-emitter path of a second bipolar transistor, said first and second transistors being of the same conductivity type and their base electrodes being connected together at a second junction;

a third transistor of opposite conductivity type to that of said first and second transistors and connected as an emitter follower between said common terminal and said second junction to control said base electrodes;

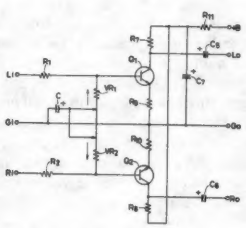
an impedance element for coupling the base electrode of said third transistor to said common terminal; and

feedback loop means coupled between said first junction and the base electrode of said third transistor for controlling the base voltage of said third transistor so that in operation the collector current of said first transistor is substantially equal to the current from said current source.

4,584,536
BALANCE CONTROL CIRCUIT

Hiroo Adachi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokuo, Japan

Filed Jul. 12, 1985, Ser. No. 754,110
Claims priority, application Japan, Jul. 25, 1984, 59-111602[U]
Int. Cl.[4] H03F *3/68;* **H04H** *5/00*
U.S. Cl. 330—295 **3 Claims**



1. In a balance control circuit for controlling the balance between right and left channel audio stereo signals, said balance control circuits having amplifiers in rear stages thereof and a pair of variable resistors for selectively attenuating said stereo signals, the improvement comprising:

means for applying DC output voltages of amplifiers in a preceding stage to said balance volume control circuit as bias voltages to said amplifiers in said rear stage; and

a single capacitor for grounding center terminals of said variable resistors.

4,584,537
SYNCHRONIZED OSCILLATOR LOCK DETECTOR

Michael W. Pugh, Oceanside, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 17, 1985, Ser. No. 724,248
Int. Cl.[4] H03L *7/06*
U.S. Cl. 331—1 A **9 Claims**

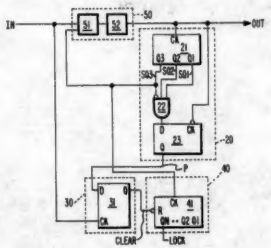
1. An all digital circuit which operates with an electronic oscillator of the type that receives an input signal and synchronizes its oscillations to transitions in the input signal, comprising:

a pulse-generating means coupled to said oscillator for digitally forming periodic pulses in synchronization with said oscillations of the oscillator;

a detecting means coupled to receive said pulses and said input signal for digitally detecting each non-coincidence

between said transitions in the input signal and said pulses; and

a counting means coupled to said detecting means for digitally counting said pulses, for resetting each time said



detecting means detects a non-coincidence between a transition in the input signal and a pulse, and for indicating said oscillator is synchronized when the count is past a predetermined number.

4,584,538

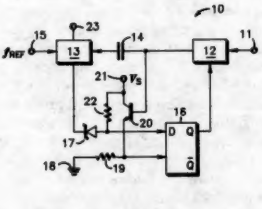
MODULUS CONTROL LOOP

Eric Trelewicz, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1984, Ser. No. 625,492

Int. Cl.⁴ H03L *7/00*

U.S. Cl. 331—1 A **13 Claims**



1. A modulus control loop having a first input, a reference input and an output, said modulus control loop comprising:

a prescaler having a first input, a second input and an output, said first input being coupled to said first input of said modulus control loop;

a phase locked loop having a first input, a second input, a first output and a second output, said first input being coupled to said output of said prescaler, said second input being coupled to said reference input of said modulus control loop and said first output being coupled to said output of said modulus control loop; and

delay altering means for delaying a mode selection of said prescaler, said delay altering means having a first input, a second input and an output, said first input being coupled to said output of said prescaler, said second input being coupled to said second output of said phase locked loop and said output being coupled to said second input of said prescaler.

4,584,539

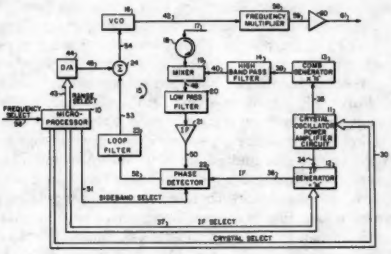
FREQUENCY-AGILE, MULTI-CHANNEL, MICROWAVE FREQUENCY SYNTHESIZER

John E. Stankey, Diamond Bar, Calif., assignor to General Dynamics Pomona Division, Pomona, Calif.

Filed Nov. 28, 1984, Ser. No. 675,903

Int. Cl.⁴ H03L *7/20*

U.S. Cl. 331—16 **5 Claims**



1. A multi-channel frequency synthesizer, comprising

a crystal oscillator circuit that may be selectively operated to provide a reference signal at a selected reference frequency that is one of a given plural number of frequencies;

an IF generator for processing the reference signal to provide an IF signal at a selected intermediate frequency that is one of a given plural number of submultiples of the selected reference frequency;

a comb generator for processing the reference signal to provide a comb or signals separated from each other by the selected reference frequency; and

a phase-locked loop including

a voltage-controlled oscillator for providing a loop output signal at a selected synthesizer output frequency;

means coupled to the output of the voltage controlled oscillator for providing a sample signal at the phase and frequency of the loop output signal;

a mixer for mixing the sample signal with the comb of signals to provide a plurality of upper and lower sideband signals with respect to the synthesizer output frequency that are separated from each other by the selected reference frequency; and

a phase detector for comparing the phase of the IF signal to the phase of the one of the plurality of sideband signals that is at a frequency closest to the intermediate frequency to thereby provide a comparison output signal;

a range selector circuit for providing a selected range-control signal that is one of a given plural number of range-control signals representative of different frequency ranges; and

means for combining the selected range-control signal with the comparison output signal to tune the voltage controlled oscillator to provide the loop output signal at the selected synthesizer output frequency.

4,584,540

DIGITAL DIRECT MODULATOR WITH TYPE OF MODULATION SELECTION

J. Timothy DuBose, Dallas; David L. Hale, Garland, and Robert K. Marston, Plano, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 20, 1985, Ser. No. 736,060

Int. Cl.⁴ H03C *3/00;* **H03K** *7/00*

U.S. Cl. 332—9 R **9 Claims**

1. Digital modulator apparatus comprising, in combination:

addressing signal first means for providing a repeating sequentially generated first set of digital address signals ranging from an equivalent of 0 to 180 electrical degrees;

addressable memory second means, including address input means connected to said first means for receiving said set of digital address signals therefrom, said second means providing an N bit digital output having a shaped first set of numerical values;

addressable memory third means, including address input means and digital value output means for providing an N bit digital output having a shaped second set of numerical values;

logic fourth means, connecting said first means to said input means of said third means, for inverting the most significant bit of the address signals whereby the digital output of said third means is shifted in phase by 90 degrees with respect to the output from said second means;

exclusive OR gate multiplying fifth means including a plurality N of first and second exclusive OR inputs and a set N+1 of outputs for providing a first product signal;

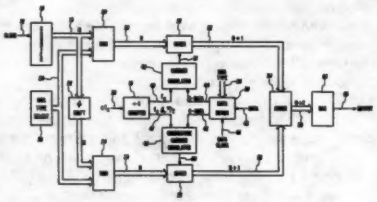
exclusive OR gate multiplying sixth means including a plurality N of first and second exclusive OR inputs and a set N+1 of outputs for providing a second product signal;

means connecting the digital outputs of said second and third means to the first exclusive OR inputs of each of said fifth and sixth means as multiplicand signals;

high frequency clock signal seventh means for supplying a serially generated second set of digital address signals;

data eighth means for providing in phase and quadrature phase data signals;

signal combining ninth means, including output means, connected to said seventh and eighth means for combining



said clock signal and said in phase data signal in a manner such that the logic value of the data signal affects the logic value of the clock signal to generate a multiplier output ninth signal at said output means thereof;

signal combining tenth means, including output means, connected to said seventh and eighth means for combining said clock signal and said quadrature phase data signal in a manner such that the logic value of the data signal affects the logic value of the clock signal to generate a multiplier output tenth signal at said output means thereof;

eleventh means, connecting said ninth means to said fifth means, for applying said ninth signal to said second exclusive OR input of said multiplying fifth means;

twelfth means, connecting said tenth means to said sixth means, for applying said tenth signal to said second exclusive OR input of said multiplying sixth means;

adding twelfth means, connected to said outputs of said fifth and sixth means for receiving said first and second product signals therefrom, said twelfth means including output means for providing a summation output twelfth signal indicative of the sum of the signals input thereto and comprising a sign bit and at least N data bits representing amplitude of a signal to be output; and

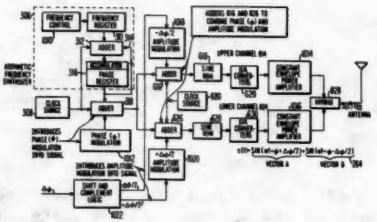
digital-to-analog converter thirteenth means, including input means connected to said output means of said twelfth means for receiving summation signals therefrom and including output means, for converting the digital input signals to an analog representation of the data as modulated by the data stored in said addressable memory second and third means.

4,584,541

DIGITAL MODULATOR WITH VARIATIONS OF PHASE AND AMPLITUDE MODULATION

Edward J. Nossen, Cherry Hill, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 28, 1984, Ser. No. 687,546
Int. Cl.[4] H03C *1/00, 3/00*
U.S. Cl. 332—16 R **9 Claims**



1. A modulator, comprising:

a source of digital information signal;

amplitude control signal generating means coupled to said source of digital information signal for generating a first digital amplitude control signal proportional to said digital information signal and for generating a second digital amplitude control signal equal in magnitude and opposite in polarity to said first digital amplitude control signal;

a digital sawtooth signal generator for generating a digital sawtooth signal having a recurrence rate equal to the desired carrier frequency;

first digital adding means coupled to said digital sawtooth signal generator and to said amplitude control signal generating means for adding together said digital sawtooth signal and said first digital amplitude control signal for generating a first phase-shifted digital sawtooth signal;

second digital adding means coupled to said digital sawtooth signal generator and to said amplitude control signal generating means for adding together said digital sawtooth signal and said second digital amplitude control signal for generating a second phase-shifted digital sawtooth signal;

first and second addressable memory means coupled to said first and second digital adding means, respectively, said first and second addressable memory means being addressed by said first and second phase-shifted digital sawtooth signal for generating first and second mutually phase-shifted sinusoidal analog signals; and

summing means coupled to said first and second addressable memory means for adding together said first and second mutually phase-shifted analog sinusoidal signals for generating a carrier signal at said recurrence rate amplitude-modulated by said digital information signal.

4,584,542

FREQUENCY MODULATOR HAVING PARALLEL-CONNECTED PHASE ADDER AND OSCILLATOR AMPLIFICATION ELEMENTS

Seitaro Shinbara, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 13, 1984, Ser. No. 579,457
Claims priority, application Japan, Feb. 16, 1983, 58-24324
Int. Cl.[4] H03C *3/02*
U.S. Cl. 332—16 T **3 Claims**

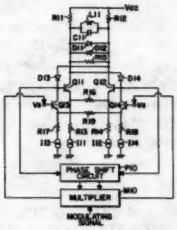
1. A frequency modulator comprising:

an oscillator circuit including an oscillator amplification element and producing an oscillation output;

phase shifting means, responsive to said oscillator circuit, for shifting the phase of said oscillation output by about 90° and thus for producing a phase-shifted signal;

multiplying means, responsive to said phase shifting means, for multiplying said phase-shifted signal by a modulating signal to produce a product signal;

a phase adder means, responsive to said multiplying means, and including a phase adder amplification element, for



adding said product signal to said oscillation output and thus for varying the frequency of said oscillation output;

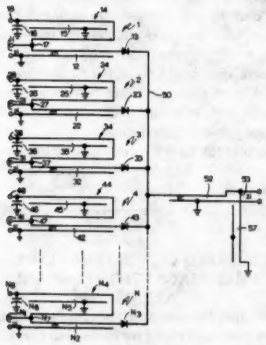
said oscillator amplification element and said phase adder amplification element being connected in parallel with respect to a power source and in such a manner that the outputs of the amplification elements are combined.

4,584,543

RADIO FREQUENCY SWITCHING SYSTEM USING PIN DIODES AND QUARTER-WAVE TRANSFORMERS

Taliaferro H. Taylor, Jr., Louisville; Robert T. Johnk, Arvada, and Clifton W. Garvin, Longmont, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Mar. 6, 1984, Ser. No. 586,621
Int. Cl.⁴ H01P *1/15*
U.S. Cl. 333—103 **10 Claims**



8. A radio-frequency switching system for RF energy applied thereto, comprising:

a dielectric substrate having an plurality of conductors on its surfaces to form an array of N quarter-wave transformers for radio-frequency signals, each of said N quarter-wave transformers having a first characteristic impedance and terminating at one end, thereby forming part of an array of adjacent ends of said N quarter-wave transformers, said substrate further having a single conductor on its surface to form an enlarged portion adjacent to the array of adjacent ends of said N quarter-wave transformers and an integral portion extending outwardly from the enlarged portion to form a quarter-wave transformer having a second characteristic impedance different than said first characteristic impedance, said substrate carrying a plurality of semiconductor switches connecting each one of the arrayed ends of said N quarter-wave transformers to the enlarged portion of the single conductor; and

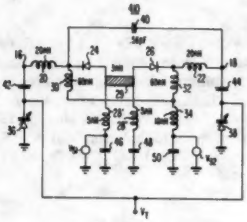
connecting means carrying said dielectric substrate, said connecting means comprising a printed wiring board having a plurality of N transmission lines thereon, each of the N transmission lines being connected at one end with an associated one of the N quarter-wave transformers of the dielectric substrate and at the opposite end with a radio frequency connection, said printed wiring board further having a single transmission line thereon connected at one end with the single, integral quarter-wave transformer of the dielectric substrate and at the opposite end with a radio frequency connection, said printed wiring board still further having a plurality of N bias quarter-wave transformers thereon, each of the N bias quarter-wave transformers being connected at one end with an associated one of the semiconductor switches wherein the application of electrical potential to any M of the N bias quarter-wave transformers reduces the electrical impedance of the associated M of the N semiconductor switches so that the RF energy can be transmitted through the M of the N associated transmission lines, the M of the N quarter-wave transformers on the dielectric substrate, the enlarged portion of the single conductor, the single, integral quarter-wave transformer of the substrate, and the single transmission line of the printed wiring board.

4,584,544

BANDSWITCHED INTERSTAGE COUPLING NETWORK INCLUDING A HIGH SIDE COUPLED CAPACITOR

James Hettiger, Marion County, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 28, 1985, Ser. No. 705,497
Int. Cl.⁴ H03H *7/01*
U.S. Cl. 333—174 **18 Claims**



8. A tunable interstage coupling network comprising:

an input terminal for receiving signal and an output terminal for supplying signal;

first and second variable capacitance tuning elements, one end of said first and second tuning elements being coupled to said input terminal and said output terminal, respectively, and the other ends being coupled to a signal reference potential;

first and second inductors, one end of said first and second inductors being coupled to said input and said output terminals, respectively;

series-coupled, oppositely-poled switching diodes coupled between the other ends of said first and second inductors, the junction of said switching diodes being coupled to a first source of switch potential via a third inductor;

fourth and fifth series-coupled inductors also coupled between the other ends of said first and second inductors, the junction between said fourth and fifth inductors being coupled to a second source of switch potential via a sixth inductor; and

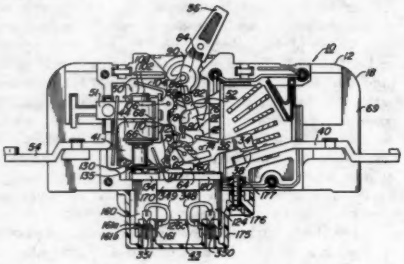
a capacitor coupled between said input and output terminals, such that it is coupled in series with said first inductor and in parallel with said second inductor.

4,584,545

SINGLE SECTION CIRCUIT BREAKER HAVING A METERING SHUNT

Harry H. Nagel, Westwood, N.J., assignor to Heinemann Electric Company, Lawrenceville, N.J.

Filed Jul. 10, 1984, Ser. No. 629,447
Int. Cl.[4] H01H *75/10*
U.S. Cl. 335—41 **10 Claims**



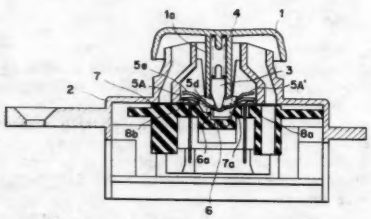
1. A single pole, single section circuit breaker comprising
an electromagnetic sensing means,
a set of relatively movable contacts comprising a movable contact and a stationary contact,
a mechanism for opening and closing said contacts in response to said electromagnetic sensing means, and
a calibrated shunt means connected to said movable contact at one end and to said electromagnetic sensing means at the other end, and not across the switch contacts, to provide a predetermined low voltage drop at a predetermined current through said circuit breaker.

4,584,546

SWITCH FOR POWER WINDOWS

Masaichi Hattori, Nagoya; Shigeo Hara, Inuyama, and Shunichi Manabe, Kagamihara, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Japan

Filed May 3, 1985, Ser. No. 730,187
Claims priority, application Japan, May 8, 1984, 59-66038[U]
Int. Cl.[4] H01H *3/00, 21/60*
U.S. Cl. 335—186 **5 Claims**



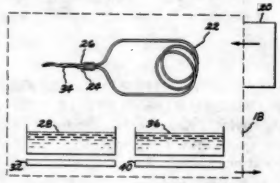
1. A switch assembly comprising
a switch body;
a knob rotatably axially supported by said switch body and having an accommodating chamber therewithin;
a presser accommodated within said accommodating chamber and having a pair of presser portions extending downward, said presser generally being spring loaded downward;
an insulator housed in said switch body beneath said presser and having a pair of supporting chambers to have an opening toward said pair of presser portions;
a pair of contact blades positioned between said presser and said insulator, each formed at its central portion with a V-shaped portion normally pressurized by said presser and with inclined surfaces extending toward the right and left directions from said V-shaped portion, said inclined surfaces being further extending toward the right and left directions to form contact portions through steps formed therebetween; stationary contacts positioned corresponding to said contact portions;
a pair of contact holders each having a supporting piece folded upward from one side thereof, said supporting pieces contacting the under surfaces of said inclined surfaces at each side in such a manner as to hold the V-shaped portion therebetween; and
a two way solenoid connected to said knob and adapted to attract in the both directions.

4,584,547

SUPERCONDUCTING JOINT FOR SUPERCONDUCTING WIRES AND COILS

Roy F. Thornton, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,117
Int. Cl.[4] H01F *7/22*
U.S. Cl. 335—216 **18 Claims**



1. A superconducting wire end adapted for being joined to other superconducting wire ends,
said wire end having at least one hundred superconducting strands of less than 100 microns in diameter embedded in a matrix metal in one portion of said wire end,
said at least one hundred superconducting strands being liberated from and extending from said matrix in another portion of said wire end and being embedded in a superconducting solder metal, and
said superconducting wire end being capable of conducting at least 100,000 amperes of current at superconducting temperatures.

4,584,548

MAGNETIC FIELD GENERATING COIL ASSEMBLY FOR NUCLEAR MAGNETIC RESONANCE IMAGING APPARATUS

Yuji Inoue; Hideto Iwaoka, and Tadashi Sugiyama, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation and Yokogawa Medical Systems, Limited, both of Tokyo, Japan

Filed Apr. 12, 1985, Ser. No. 722,782
Claims priority, application Japan, Apr. 26, 1984, 59-84765
Int. Cl.[4] H01F *5/00*
U.S. Cl. 335—299 **2 Claims**

1. A coil assembly for generating a magnetic field comprising a pair of inner coils and a pair of outer coils, each of said coils having dimensions which satisfy the following ranges

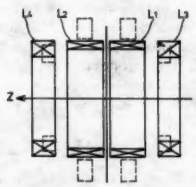
$$a/b \text{ of the inner coil} = 0.4;$$

$$a/b \text{ of the outer coil} = 1.0;$$

$$0.6 = r_c = 1.0; \text{ and}$$

$$0.8 = R_1 Rs = 1.2;$$

wherein a/b is ratio of cross sectional flatness, r_c is ratio of product of current in the outer coil and number of turns thereof with respect to product of current in the inner coil and number of turns thereof; and R_1/Rs is ratio of radius of the



inner coil with respect to radius of the outer coil; and wherein a Taylor expansion of an axial magnetic field at the center of said inner coils and outer coils has eliminated second, fourth and sixth terms.

4,584,549

MAGNET SYSTEM

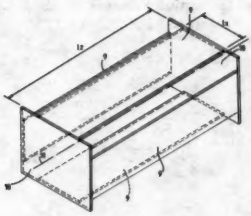
Ian J. Brown, and John M. Bird, both of Oxon, England, assignors to Union Camp Corporation, Wayne, N.J.

Filed Nov. 16, 1984, Ser. No. 672,274

Claims priority, application United Kingdom, Dec. 1, 1983, 8332177

Int. Cl.⁴ H01F *7/00*

U.S. Cl. 335—301 **8 Claims**



1. A magnet system comprising magnetic field generating means; and a shield including at least one sheet of magnetic material positioned relatively to said magnetic field generating means whereby said magnetic field generating means generates a magnetic field which interacts with said at least one sheet, the dimensions defined by said at least one sheet and the position of said at least one sheet relatively to said magnetic field generating means being preselected such that at the edge of said at least one sheet the component of magnetisation parallel to said sheet in the direction of the magnetic field is less than zero.

4,584,550

CONTACT PIECE FOR ESTABLISHING DELTA CIRCUITS ON THREE-LEGGED TRANSFORMERS

Petrus B. Versteegen, Malden, Netherlands, assignor to Smit Transformatoren B.V., Netherlands

Filed Mar. 31, 1983, Ser. No. 480,755

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1982, 3212472

Int. Cl.⁴ H01F *33/00*

U.S. Cl. 336—10 **9 Claims**

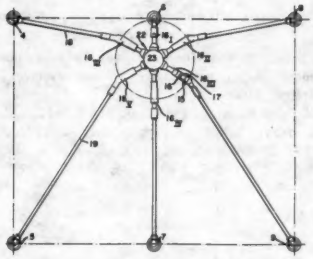
1. A connecting member for establishing delta circuits on a three-legged transformer of the type having three pairs of connecting terminals corresponding to the high end voltage windings of a three-phase current, said member comprising:

a body formed from a mass of an insulating material;

first, second and third pairs of opposing connecting elements integrally molded with said body so as to radially extend symmetrically about the center of said body;

electrically conductive means embedded in said mass of insulating material and housed within said first, second and third pairs of connecting elements for defining first, second and third discrete paths of electrical communication and for establishing a predetermined delta circuit when said pairs of connecting elements are electrically connected to said transformer terminals, wherein

said conducting means includes first, second and third cables and wherein said first cable is associated with said first pair of opposing connecting elements, said second cable is associated with one of the connecting elements of said second pair on one lateral side of said first pair and with one of the connecting elements of said third pair on the other lateral side of said first pair, and said third cable is



associated with the other of the connecting elements of said second pair and the other of the connecting elements of the third pair, wherein

said second and third cables each include respective end portions and a center portion, said center portions of said second and third cables being disposed in said body substantially parallel to one another and are each substantially transversely disposed relative to a center portion of said first cable, said center portions of said second and third cables being vertically displaced from and bridging said center portion of said first cable, wherein

selective positioning of said body responsively positions said first, second and third cables relative to a respective one of said three pairs of connecting terminals of said three-legged transformer so that a selected delta circuit is established

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4,584,551

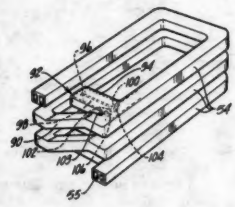
TRANSFORMER HAVING BOW LOOP IN TUBULAR WINDING

Peter H. Burgher, Utica, and John L. Boomer, Howell, both of Mich., assignors to Marelco Power Systems, Howell, Mich.

Filed Sep. 24, 1984, Ser. No. 653,144

Int. Cl.⁴ H01F *27/08*

U.S. Cl. 336—61 **11 Claims**



1. A transformer comprising:

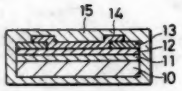
a core,
a first winding having a plurality of first loops in said core,
a secondary winding having a plurality of second loops in said core,
said second loops being consecutively interpositioned between said first loops so that one end of each loop of said first winding terminates short of an adjacent end of each loop of said seconary winding,
said second winding comprising a tubular conduit, said conduit forming a fluid passageway,
means for passing a fluid conduit through said fluid passageway, and
wherein said second winding incudes a bow adjacent said end of each loop of said second winding so that the adjacent ends of each loop of the first winding are sandwiched in between said bows.

4,584,552

HALL ELEMENT WITH IMPROVED COMPOSITE SUBSTRATE

Shinichi Suzuki; Masami Mochizuki, and Takashi Suemitsu, all of Yamanashi, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 23, 1983, Ser. No. 478,123
Claims priority, application Japan, Mar. 26, 1982, 57-49693; Mar. 26, 1982, 57-49694; Apr. 2, 1982, 57-55752
Int. Cl.[4] H01L *43/00*
U.S. Cl. 338—32 H **15 Claims**



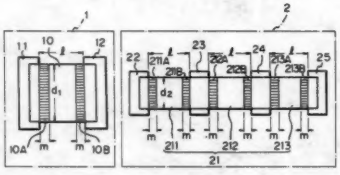
1. A magnetoelectric transducer including a semiconductor material having high mobility, comprising a substrate having a high heat conductivity, an alumina film formed on said substrate, and a semiconductor thin film comprising said high mobility semiconductor material formed on the surface of said alumina film, wherein said substrate is coated with a silicon oxide film, said alumina film being formed on said silicon oxide film.

4,584,553

COATED LAYER TYPE RESISTOR DEVICE

Norihito Tokura, Nukata, and Hisasi Kawai, Toyohashi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 5, 1984, Ser. No. 617,478
Claims priority, application Japan, Jun. 7, 1983, 58-102112
Int. Cl.[4] H01C *1/01*
U.S. Cl. 338—320 **3 Claims**



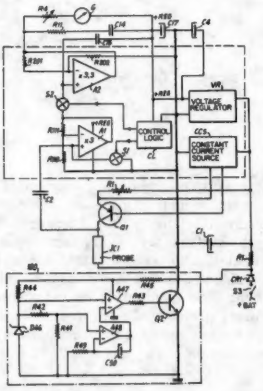
1. A coated layer type resistor device comprising:
an insulator substrate;
a first resistor element formed on said insulator substrate and consisting of a resistor layer and end conductor electrodes at the ends of said resistor layer; and
a second resistor element formed on said insulator substrate connected in a predetermined relationship with said first resistor element and consisting of a resistor layer, end conductor electrodes at the ends of said resistor layer, and a plurality of intermediate conductors;
the ratio between the resistances of said first and second resistor elements being selected to be greater than a predetermined ratio; the distance between adjacent ones of said intermediate conductors and the distance between one of said end conductor electrodes and the adjacent intermediate conductor in said second resistor element being equal to the distance between end conductor electrodes in said first resistor element.

4,584,554

ENGINE OIL LEVEL DETECTING DEVICE

Mario A. Weiss, Paris, France, assignor to Jaeger, Levallois-Perret, France

Filed Feb. 7, 1983, Ser. No. 464,724
Claims priority, application France, Feb. 19, 1982, 82 02773
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 340—59 **8 Claims**

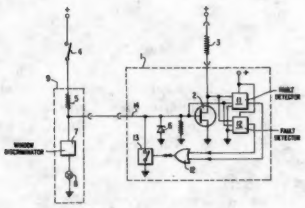


1. A device for measuring the oil level in an internal combustion engine of a vehicle that includes an ignition switch for opening and closing an ignition contact, said device comprising a resistive wire probe at least partially immersed in said oil, a display device, a measuring and storage circuit connected between the wire probe and the display device, and circuit means for feeding such measuring and storage circuit following closure of the ignition contact, said circuit means comprising subcircuit means connected between a ground point and said ignition contact and operable to establish a temporary ground connection for said measuring and storage circuit, after the closing of said ignition contact during a period of time after the operation of the engine has been initiated and sufficient to allow the driver to read the oil level on said display device.

4,584,555
FAULT INDICATING CIRCUIT FOR A CURRENT CONSUMING LOAD CONNECTED TO AN ELECTRONIC SWITCHING DEVICE

Gottfried Domorazek, Ratingen, Fed. Rep. of Germany, assignor to AEG KABEL Aktiengesellschaft, Monchen-Gladbach, Fed. Rep. of Germany

PCT No. PCT/EP81/00176, § 371 Date Jul. 12, 1982, § 102(e) Date Jul. 12, 1982, PCT Pub. No. WO82/01801, PCT Pub. Date May 27, 1982
PCT Filed Nov. 4, 1981, Ser. No. 403,503
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1980, 3042415
Int. Cl.⁴ B60Q *1/26*
U.S. Cl. 340—71 **15 Claims**



1. A circuit for reporting faults in a current consuming load comprising in combination

an electronic switching means connected to a current consuming load and responsive to a control signal at its input for causing the load to be switched on;

signal means for selectively providing said control signal;

a control line connected between said signal means and said input of said electronic switching means;

a least one fault detecting means for providing a fault signal upon detection of a fault;

controlled impedance means connected to said input of said electronic switching means for varying the input resistance of said electronic switching means in response to receipt of a said fault signal; and

indicator means connected to said control line, and responsive to the current flowing in said control line when said load is switched on, for producing a fault indication if the current in said control line deviates from the current value flowing when there is no fault.

4,584,556
RATIO COMPARATOR FOR DIGITAL SIGNALS

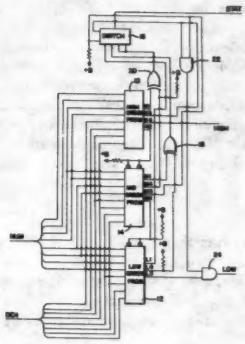
Steven S. Chan, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 364,923, Apr. 2, 1982, abandoned. This application Dec. 21, 1984, Ser. No. 684,168
Int. Cl.⁴ G06F *7/02*
U.S. Cl. 340—146.2 **24 Claims**

1. Apparatus for comparing the ratio of two binary numbers to a predetermined thresold, comprising:

a first memory unit for receiving input information relating to data of a particular level of significance concerning each of the two binary numbers and providing an output signal that signifies one of (a) a definite indication whether their ratio excedds the threshold, (b) a probable indication of whether their ratio exceeds the threshold, and (c) a lack of sufficient data to determine whether their ratio exceeds the threshold;

a second memory unit for receiving input information containing data of lesser significance than that received by said first memory unit and, in response to a signal from said first memory unit signifying condition (c), providing an output signal that signifies whether their ratio exceeds the threshold, and in response to a signal from said first memory unit signifying condition (b), providing a signal indicating the validity of a probable indication from said first memory unit; and

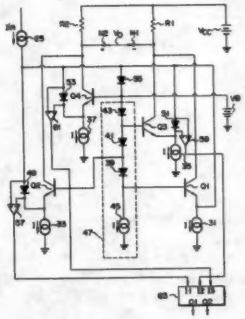


switching means responsive to the output signals from each of said memory units for transmitting an indication relating to whether the ratio of the binary numbers exceeds the predetermined threshold.

4,584,557
QUANTIZER-SUBTRACTOR CIRCUIT

Yasuhiro Sugimoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 7, 1984, Ser. No. 587,128
Claims priority, application Japan, Mar. 30, 1983, 58-54302
Int. Cl.⁴ H03M *1/14*
U.S. Cl. 340—347 AD **10 Claims**



1. A quantizer-subtractor circuit comprising:

analog signal inputting means for inputting an analog input signal;

digital signal outputting means for producing a digital signal corresponding to said analog input signal input by said analog signal inputting means;

2^n NPN transistors, where n is a positive integer;

bias means connected to said 2^n transistors for supplying different odd-ordered and even-ordered magnitudes of bias voltages to the base of each of said 2^n transistors;

controlling means connected to said 2^n transistors and said analog signal inputting means for controlling current passing through said 2^n transistors based on said analog input signal input and on said bias voltages applied to the bases of said 2^n transistors by said bias means, said controlling means including

constant current sources coupled to the emitters of said 2^n transistors,

a circuit connecting said analog signal inputting means to the emitter of the one of said 2^n transistors having the smallest of said different bias voltages, and

2^n-1 diode means for connecting said analog signal inputting means to the 2^n-1 of said 2^n transistors not having the smallest of said bias voltages; and

analog signal producing means for producing an analog signal corresponding to the difference between the sum of the currents flowing through those of said 2^n transistors supplied with bias voltages with odd-ordered magnitudes by said bias means, and the sum of the currents flowing through those of said 2^n transistors supplied with the bias voltages with even-ordered magnitudes by said bias means, in order that an analog signal corresponding to the difference between the value of said analog input signal input by said analog signal inputting means and the value corresponding to the digital signal output by said digital signal outputting means is produced as a subtraction output.

4,584,558

ANALOG/DIGITAL CONVERTER

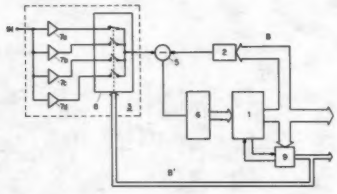
Martin Maschek, Würenlos, and Georg Mastner, Niederrohrdorf, both of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed May 14, 1985, Ser. No. 733,877

Claims priority, application Switzerland, May 15, 1984, 2379/84

Int. Cl.[4] H04B *14/06*

U.S. Cl. 340—347 AD **7 Claims**



1. An analog/digital converter comprising:

a digital integrator;

a digital/analog converter which is supplied with an output of the digital integrator;

an input amplifier which is supplied by an analog input signal;

a subtractor which forms a difference signal from an output of the input amplifier and an output of the digital/analog converter;

a tracking circuit which generates tracking signals for the digital integrator as a function of the difference signal;

said input amplifier having a variable gain factor controlled as a function of the output of the digital integrator;

a multiplier connected to the digital integrator for multiplying the output of the digital integrator and for loading the multiplied output back into the digital integrator; and

a control logic controlled by the output of the digital integrator provided for range switching and storing a first output bit pattern which represents the gain factor of the input amplifier, the output of the digital integrator forming a second output bit pattern, said first and second output bit patterns together forming a digitized measured value corresponding to said analog input signal.

4,584,559

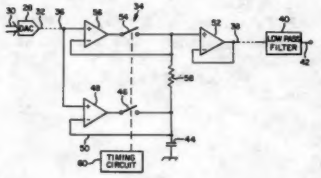
DUAL RANK SAMPLE AND HOLD CIRCUIT AND METHOD

Bruce J. Penney, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 13, 1984, Ser. No. 620,233

Int. Cl.[4] H03K *5/159*

U.S. Cl. 340—347 SH **12 Claims**



12. A digital-to-analog converter system comprising:

(a) a digital-to-analog converter having an analog output and a predetermined maximum analog output setting period following each conversion event;

(b) storage means for storing a charge representative of sampled voltage;

(c) charging means for selectively coupling said analog output to said storage means along a first signal path for a first time period starting after the settling time of one conversion event, and ending after said sampled voltage has reached the voltage of said analog output but before the next conversion event; and

(d) output means for providing an output signal responsive to said analog output along a second signal path during said first time period and thereafter responsive to said sampled voltage along a third signal path for a second time period lasting past the settling time of said next conversion event.

4,584,560

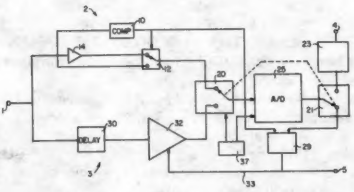
FLOATING POINT DIGITIZER

James E. McDaniel, Sunnyvale, and Kenneth R Smith, Milpitas, both of Calif., assignors to Geometrics, Inc., Sunnyvale, Calif.

Filed Jun. 11, 1984, Ser. No. 618,985

Int. Cl.[4] H03M *1/00*

U.S. Cl. 340—347 AD **7 Claims**



1. In an analog digitizer comprising input means for receiving an analog signal, a variable gain amplifier and analog-to-digital conversion means for converting the output of said variable gain amplifier, and delay means coupled between said input means and said variable gain amplifier, the improvement comprising means for providing an order of magnitude indicating signal, switching means for connecting said indicating signal to said analog-to-digital conversion means to produce a digitized indicating signal, switching means having a switching period selected in accordance with the delay provided by said delay means for applying said digitized indicating signal to said variable gain amplifier as a function of the magnitude of the analog signal, said variable gain amplifier being set to provide a current gain value to the analog signal in response to the

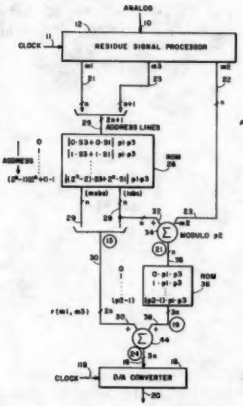
digitized indicating signal and switching means connected to the output of said variable gain amplifier and defining a second half cycle in which the output of said variable gain amplifier is provided to said analog-to-digital conversion means for producing a value indicative of the mantissa of the analog value.

4,584,561

METHOD OF RESIDUE TO ANALOG CONVERSION

Peter S. Bernardson, Westchester, Penn., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Sep. 24, 1984, Ser. No. 653,402
Int. Cl.⁴ H03M 1/12
U.S. Cl. 340—347 DA **12 Claims**



1. The method of converting a binary representation of a residue signal {m1,m2,m3} in a prescribed residue number system that is defined by the moduli set {p1=2^n-1, p2=2^n, p3=2^n+1}, where n is an integer, to an associated binary output signal r(m1,m2,m3), said method comprising the steps of:

first producing a first digital signal that is a binary representation of the sum of the product terms m1*S3 and m3*S1, the sum being taken modulo p1*p3, where S1=(p1*p2)/2 and S3=(p2*p3)/2;

second producing a second signal that is a binary representation of the difference between binary bits of the first signal and the binary representation of the residue signal m2, the difference between taken modulo p2;

third producing a third signal that is a binary signal representation of the product of the second signal and the constants p1 and p3; and

first summing the first and third signals for producing the binary output signal r(m1,m2,m3) that is associated with the residue signal {m1,m2,m3}.

4,584,562

METHOD OF RESIDUE TO ANALOG CONVERSION

Peter S. Bernardson, Westchester, Penn., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Sep. 24, 1984, Ser. No. 653,410
Int. Cl.⁴ H03M 1/12
U.S. Cl. 340—347 DD **9 Claims**

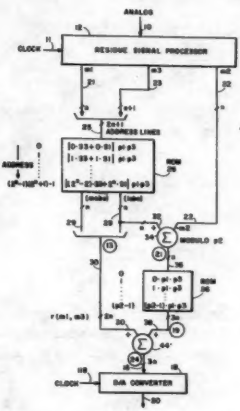
1. The method of converting binary signals a and b, which are made up of pluralities of binary bits, to a binary representation of the sum thereof taken modulo p1*p3, comprising the steps of:

summing the signals a and b for producing a first binary signal;

operating on bits of the first signal for producing a second binary signal which is proportional to the product of the constant 2^{2n} and the integer part of the first signal divided by 2^{2n};

first combining the second signal and said bits of the first signal for producing a third binary signal which is proportional to the difference between the second signal and the integer part of the first signal divided by 2^{2n};

second combining the first signal and the third signal for producing a fourth binary signal that is proportional to the difference therebetween;



first generating a fifth binary signal that is proportional to a constant ($2^{2n}-1$);

first comparing the fourth signal with the fifth signal and passing the fifth signal as a sixth binary signal only when the fourth signal is greater than or equal to said constant ($2^{2n}-1$); and

third combining the fourth signal and the sixth signal for producing a seventh binary signal which is proportional to the difference therebetween and which corresponds to the desired output signal a+b taken modulo ($2^{2n}-1$).

4,584,563

METHOD OF RESIDUE TO ANALOG CONVERSION

Peter S. Bernardson, Tempe, Ariz., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Sep. 24, 1984, Ser. No. 653,412
Int. Cl.⁴ H03M 1/12
U.S. Cl. 340—347 DA **18 Claims**

1. The method of converting a binary representation of a residue signal {m1,m2,m3} in a prescribed residue number system that is defined by the moduli set {p=2^n-1, p2=2^n, p3=2^n+1}, where n is an integer, to an associated binary output signal r(m1,m2,m3), comprising the steps of:

first producing first and second digital output signals that are binary representations of the sum and difference of the residue digit signals m1 and m3;

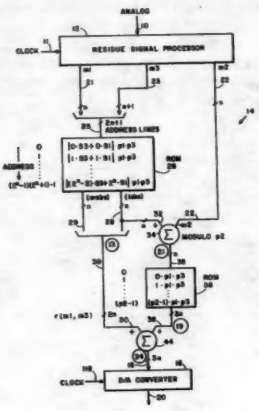
second producing a third binary signal corresponding to the product of the first signal and the constant ($2^{2n}-1$);

third producing a fourth binary signal corresponding to the product of the second signal and the constant (2^n-1);

fourth producing a fifth signal which is a binary representation of the sum of the third and fourth signals, taken modulo p1*p3 and which corresponds to the modulo p1*p3 sum of the products of the residue digit signals m1 and m3 and associated constants S3 and S1, where S1=p1*p2/2 and S3=p2*p3/2;

fifth producing a sixth signal which is the modulo p2 difference between bits of the fifth signal and the residue digit signal m2;

sixth producing a seventh binary signal which is the product of the sixth signal and the constants p1 and p3; and

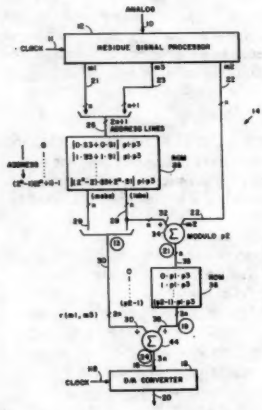


seventh producing the binary output signal r(m1,m2,m3) which is the sum of the fifth and seventh signals and which corresponds to the residue signal {m1,m2,m3}.

4,584,564
RESIDUE TO ANALOG CONVERTER

Peter S. Bernardson, Westchester, Penn., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Sep. 24, 1984, Ser. No. 653,422
Int. Cl.[4] H03M *1/12*
U.S. Cl. 340—347 DA **19 Claims**



1. Apparatus for converting a binary representation of a residue signal {m1, m2, m3} in a prescribed residue number system that is defined by the moduli set {p1=2^n−1, p2=2^n, p3=2^n+1}, where n is an integer, to an associated binary output signal r(m1,m2,m3), said apparatus comprising:

first means responsive to the residue digit signals m1 and m3 for producing a signal on a plurality of lines that is the sum of the product terms m1*S3 and m3*S1, taken modulo p1*p3, where S1=p1*p2/2 and S3=p2*p3/2;

second means for producing an output signal corresponding to the difference between bits of the modulo p1*p2 output signal of said first means and the residue digit signal m2, taken modulo p2;

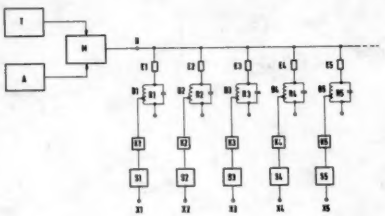
third means for producing an associated binary output signal representative of the product of the output signal of said second means and the constants p1 and p3; and

fourth means for combining the output signals of said first and third means for producing the binary output signal r(m1,m2,m3) corresponding to the residue signal {m1,m2,m3}.

4,584,565
ANALOG/DIGITAL CONVERTER

Hans Werba, Theresienstrasse 11, D-8390 Passau, Fed. Rep. of Germany

Filed Mar. 21, 1985, Ser. No. 714,388
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 3413051
Int. Cl.[4] H03K *13/02*
U.S. Cl. 340—347 AD **16 Claims**



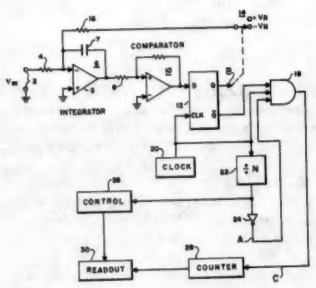
1. An analog/digital converter having a carrier frequency source and a modulation means by means of which the carrier frequency signal is modulated with the analog signal to be converted, wherein the modulation means effects frequency modulation,

the modulation means is followed by a plurality of parallel-fed resoncance means each having a different resonance frequency in the peak frequency deviation range and providing in the case of resonance a first binary logical value (e.g. "1") and in the case of non-resonance the other binary logical value (e.g. "0").

4,584,566
ANALOG TO DIGITAL CONVERTER

Samuel A. Arcara, Doylestown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 21, 1984, Ser. No. 685,105
Int. Cl.[4] H03K *13/02*
U.S. Cl. 340—347 AD **5 Claims**



1. An analog to digital converter comprising

integrating means having an input and an output,
means for applying an electrical signal to be converted to the input of the integrating means,
switch means for selectively applying a positive and a negative reference signal opposing said input signal to said input of said integrating means, said integrating means being responsive to the application of the input signal and said second signal to produce an output signal at said output of said integrating means which ramps up and down between the positive and negative limits of the reference signal,
level detection means responsive to two different levels of said integrator output signal to cause an output signal from said detection means to switch alternately between a first and a second state when said two levels are alternately reached by said output signal from said integrator means,
flip-flop means responsive to a start edge of input signals applied thereto and having a signal input and a clock input, said signal input being connected to an output of said detector means,
fixed frequency clock signal generating means arranged to supply clock signals to the clock input of said flip-flop means,
frequency dividing means for dividing said clock signals from said clock means by a fixed integer,
three input AND gate means arranged to receive an output signal from said clock means as a first input, an output signal from said frequency dividing means as a second input and an output signal from one side of said flip-flop means as a third input,
circuit means for connecting an output signal from the other side of said flip-flop means as an energizing signal to said switch means, and
counter means arranged to count output signals from said AND gate means.

4,584,567

DIGITAL CODE DETECTOR CIRCUITS

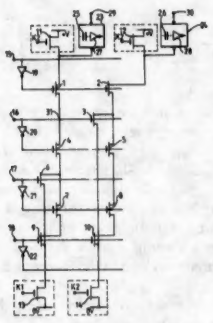
John R. Kinghorn, Sutton, United Kingdom, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 26, 1984, Ser. No. 665,270

Claims priority, application United Kingdom, Oct. 26, 1983, 8328622

Int. Cl.⁴ H03K *19/082*

U.S. Cl. 340—347 DD **4 Claims**



1. A digital code detector circuit for detecting those (n) input code combinations of an n-bit (n>3) binary code, each bit having a first or a second binary value, which contain only a single bit of the first binary value, comprising:
a set of n input leads for respectively receiving n concurrent input data signals respectively representing the n bits of such code combinations in order of binary significance;
a set of inverter circuits respectively connected to said input leads for producing a set of inverse data signals representing the inverse of the binary values of the input signals at such input leads;
a set of m (m>1) output circuits for producing m-bit binary output address code combinations respectively and uniquely corresponding to those input code combinations which contain only a single bit of the first binary value;
respective sources of pulsed drive voltages for the respective output circuits;
and a network of gating elements connecting each of said output circuits to the corresponding source of drive voltage, such gating elements being controlled by the input data signals and the inverse data signals to gate the drive voltage supplied to each output circuit so that when more than one input code combination containing only a single bit of the first binary value is present concurrently on the set of input leads the output circuit produce only the address code combination corresponding to the one of such concurrent input code combinations having the highest binary value.

4,584,568

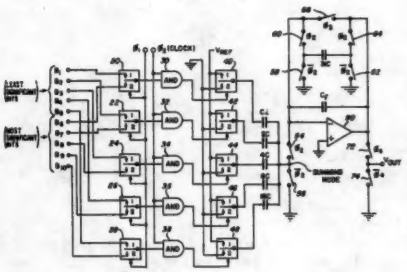
TWO-STEP SWITCHED-CAPACITOR DIGITAL TO ANALOG CONVERTER

Mehrdad Zomorrodi, Culver City, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1984, Ser. No. 623,889

Int. Cl.⁴ H03M *1/00*

U.S. Cl. 340—347 DA **6 Claims**



1. A switched capacitor, digital to analog signal converter, wherein said digital signal comprises a binary word of a predetermined number of bits, comprising:
a first plurality of switch means (20–28) for receiving and transferring the input digital signals, said first switch means being switchable between first and second positions for transferring the least significant bits of said input digital signal in the first position and for transferring the most significant bits of said input digital signal in the second position,
a second plurality (40–48) of switch means coupled to said first plurality of switch means for selectively transferring either a first voltage reference level or a second voltage reference level in response to said input digital signal,
a first plurality of unit capacitor means (C–16C) connected to form a parallel array of capacitors, each one of said parallel array being connected to a different one of said second plurality of switch means and being charged either to said first voltage reference level or said second voltage level, the charges on said array of capacitors being summed,
amplifier means (90) coupled to said plurality of unit capacitors for amplifying and converting said charge to said analog signal,
a second plurality of unit capacitors connected together and to the input and output of said amplifier means in parallel; and

second plurality of switch means selectively placed in said second plurality of unit capacitors to cause one combination of capacitors to be placed across said amplifier means when said least significant bits are being converted and another combination of capacitors to be placed across said amplifier means when said most significant bits are being converted.

4,584,569

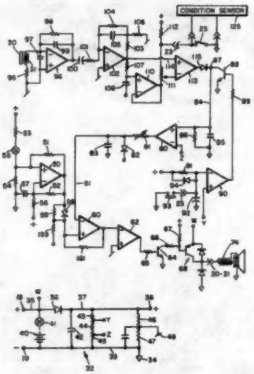
MOTION SENSITIVE SECURITY SYSTEM

Michael J. Lopez, 970 Calle Venado, Anaheim, Calif. 92807; Howard A. Williams, Jr., 2629 X. Griset Pl., Santa Ana, Calif. 92704, and Henry J. Salvatori, 10633 Virginia Ave., Whittier, Calif. 90603

Continuation-in-part of Ser. No. 324,170, Nov. 23, 1981, abandoned. This application Sep. 17, 1984, Ser. No. 650,835

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—566 **22 Claims**



15. In a security system:

sensing means for providing a motion signal in response to motion imparted to an element of the sensing means;

a signal processing means responsive to said motion signal for providing an output signal;

said signal processing means comprising first, second and third time delay circuits the first time delay circuit being connected to delay operation of the second and third time delay circuits and the second time delay circuit being connected to delay provision of said output signal following receipt by said signal processing means of a motion signal for a period determined only by said second time delay circuit;

said third time delay circuit being connected to continue furnishing of said output signal following termination of the motion signal for a period determined, after completion of the operation of said second time delay circuit, only by said third time delay circuit.

4,584,570

ELECTRICAL APPLIANCE PLUG REMOVAL ALARM

A. Steve Dotson, Pelver, S.C., assignor to Eamon Solan, Boston, Mass.

Filed Dec. 12, 1983, Ser. No. 433,621

Int. Cl.⁴ G08B *21/00*

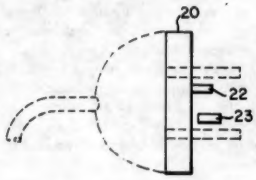
U.S. Cl. 340—568 **2 Claims**

1. Security system apparatus comprising in combination with an electrical outlet and mating electrical appliance plug,

a wafer of insulating material having holes therethrough and positioned to receive an electrical appliance plug whereby the wafer is interposed between said plug and said outlet when the appliance is plugged in,

a spring loaded shorting bar within said disk disposed to short the studs of said plug when said spring is fully extended,

a first spring loaded pin which blocks said shorting bar when the appliance is plugged in,



a second spring loaded pin for holding said shorting bar in setting the device which releases said shorting bar after said blocking pin engages when said plug is plugged into said electrical outlet,

said shorting bar having a third pin which mates with a track in said wafer and extends out of said wafer whereby the shorting bar can be set for installation on said electrical plug.

4,584,571

MAGNETIC ARTICLE THEFT ALARM

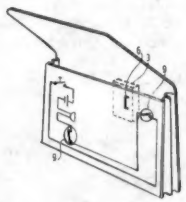
Johannes W. M. Smit, Waalwijk, and Gerard J. A. Spoorenberg, Geertruidenberg, both of Netherlands, assignors to Castelijn & Beerens Lederwaren B.V., Waalwijk, Netherlands

Filed Nov. 18, 1983, Ser. No. 553,072

Claims priority, application Netherlands, Nov. 19, 1982, 8204500

Int. Cl.⁴ G08B *13/14*

U.S. Cl. 340—572 **7 Claims**



1. A portable alarm for preventing the theft of an article from a cavity in a garment, bag, or the like comprising:

a permanent magnetic body attached to said article;

a casing attached to said garment, bag or the like;

at least two magnetic switch means disposed in said casing and serially connected, for sensing the proximity of said permanent magnetic body attached to said article, said switch means being open in response to the proximity of said permanent magnetic body and being otherwise closed;

a power source serially connected with said at least two magnetic switch means; and

a signalling device serially connected to said at least two magnetic switch means and said power source, said signalling device notifying a user of said garment, bag or the like when all of said switch means are closed to signal that said article has been removed from proximity with any of said magnetic switch means;

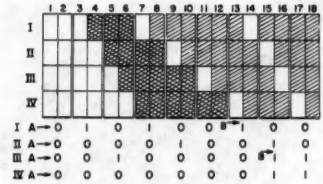
said at least two magnetic switch means being spaced apart within said cavity at a distance no more than the distance within which a said magnetic switch means will respond

to said permanent magnetic body so as to allow said article to shift in said cavity without activating said alarm.

4,584,572
VIDEO SYSTEM

Lester T. Lambert, III, Garden Grove, Calif., assignor to Electro-Sport, Inc., Costa Mesa, Calif.

Filed Jun. 11, 1982, Ser. No. 387,597
Int. Cl.[4] G09G *1/28*
U.S. Cl. 340—703 **6 Claims**



1. The method of enhancing resolution in video displays the display area of which is divided into a plurality of series of four pixels arranged in series as a first pair and a second pair of pixels;

storing first and second sets of information respectively associated with said first and second pairs of pixels, each set comprising color information and position information and position information, the position information designating whether the pixel adjacent the pair of pixels associated with the other of said sets of information is to be colored in accordance with the color information in said first set or said second set of information; and

coloring each pixel according to the color information in the set of information associated with the pair of pixels of which it is a part unless the position information in the other set of information designates that it be colored in accordance with the color information in said other set of information in which case it is colored in accordance with the color information in said other set of information.

4,584,573
COMBINED CHARACTER AND BACKGROUND PATTERN PRINT CONTROL SYSTEM

Matsutaka Ito, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 8, 1982, Ser. No. 396,267
Claims priority, application Japan, Jul. 20, 1981, 56-114547; Jul. 20, 1981, 56-114548; Jul. 23, 1981, 56-116881
Int. Cl.[4] G09G *1/06, 1/14*
U.S. Cl. 340—734 **11 Claims**

1. A print control system for a dot matrix printer comprising:

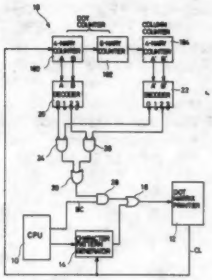
character pattern signal generation means for developing a character pattern data signal associated with an individual character to be printed at a desired location in response to each character code signal applied thereto;

background pattern signal generation means for developing a background pattern data signal indicative of a desired background pattern;

combining means for combining said character pattern data signal developed from said character pattern signal generation means with said background pattern data signal developed from said background pattern signal generation means to produce an output signal corresponding to the desired background pattern and character to be printed at said desired location;

drive means responsive to said combining means, for applying the output signal of said combining means to said dot matrix printer, to print said character and desired background pattern at said desired location; and

means for shifting said printer to a new location of the next individual character to be printed in response to the completion of the printing of said character and desired background by said drive means the shifting of said printer to the new location of the next individual character enabling

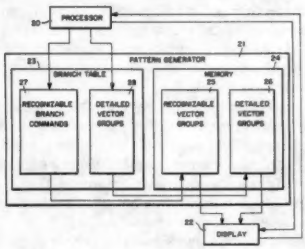


said character pattern signal generation means and background pattern signal generation means to develop a new character code signal and background pattern data signal for combining by said combining means to produce a new output signal applied to said drive means.

4,584,574
INFORMATION DISPLAY AND EDITING SYSTEM

William F. Beausoleil, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1983, Ser. No. 532,112
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—744 **8 Claims**



1. A method for displaying and editing information on a storage tube comprising the steps of:

dividing the information to be displayed into a first group of vectors necessary to display a recognizable version of the information to be displayed and a second group of vectors necessary to display a detailed version of the information to be displayed;

storing said first group of vectors and said second group of vectors in a memory means;

storing a first group of branch commands to said first group of vectors and a second group of branch commands to said second group of vectors in a branch table means;

placing said storage tube in refresh mode;

addressing said first group of branch commands;

displaying said first group of vectors while said storage tube is in refresh mode;

editing said first group of vectors;

placing said storage tube in store mode;

addressing said second group of branch commands, and

displaying said second group of vectors while said storage tube is in store mode.

4,584,575

METHOD AND DEVICE FOR THE ASYNCHRONOUS SERIES COMMUNICATION ON THE MULTIPOINT TYPE OF A PLURALITY OF LOGIC TRANSCEIVERS

Christian Ryckeboer, 2, av Bouvard, 74000 Annecy, France

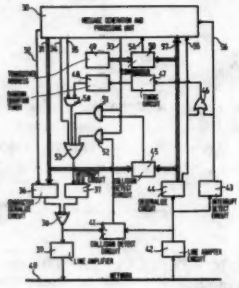
PCT No. PCT/FR82/00092, § 371 Date Jan. 31, 1983, § 102(e) Date Jan. 31, 1983, PCT Pub. No. WO82/04366, PCT Pub. Date Dec. 9, 1982

PCT Filed Jun. 3, 1982, Ser. No. 464,499

Claims priority, application France, Jun. 5, 1981, 81 11687

Int. Cl.[4] H04Q 9/00

U.S. Cl. 340—825.5 15 Claims



1. A method of conducting asynchronous multipoint serial communication of binary data message signals between a plurality of transceivers each having a different address and connected in parallel to a network, each message containing characters for identifying the address of the sender and the address of the addressee of the message, comprising:

providing a single path bidirectional network;

continuously receiving at each transceiver any signals present on the network;

inhibiting transmission of any message signals to be sent by each transceiver as long as a signal originating from another transceiver is present on the network and received by the transceiver and setting a waiting time period before initiating transmission which is longer than a preset minimum waiting time after reception of said signal originating from another transceiver;

formatting the message signals by providing a start of message signal, signals corresponding to the addresses of the sender and the addressee, binary signals corresponding to characters of the message including preceding each message character with a binary start signal and following each message character with a binary end signal, and an end of message signal;

comparing at each transceiver message signals transmitted by the transceiver with message signals simultaneously received by the transceiver, interrupting the transmitted message signals in the absence of a proper comparison, and restarting transmission of the message signals in the absence of reception of other signals on the network over a time interval of random duration; and

transmitting from each transceiver on the network the end of message signal upon the absence of the proper comparison between message signals being transmitted by the transceiver and those signals simultaneously received by the transceiver;

thereby enabling transmitter and receiver circuits in each transceiver to operate with different internal clock rates and allowing the formatting of the message signals to exclude signals corresponding to an encoded clock rate.

4,584,576

RINGING SIGNAL GENERATOR

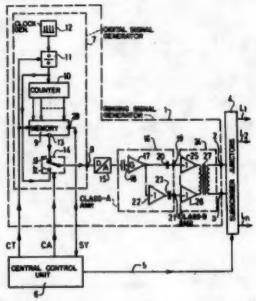
Alain Forestier, Ploubezre, and Philippe Fenaux, Sceaux, both of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Oct. 26, 1983, Ser. No. 545,793

Claims priority, application France, Oct. 27, 1982, 82 17979

Int. Cl.[4] H04Q 9/00; H04M 3/02, 1/00

U.S. Cl. 340—825.38 6 Claims



1. A d.c. powered ringing signal generator for producing at its output ringing signals for a group of subscriber lines in a telephone exchange comprising a central control unit which produces control signals signifying whether a ringing signal or no ringing signal is to be produced for the group of subscriber lines, such ringing signal generator comprising:

a cascade arrangement of a digital signal generator, a digital-to-analog converter and amplifying circuit means;

said digital signal generator being controllable by said control signals to produce at its output a first digital signal when a control signal signifies that a ringing signal is to be produced and to produce at its output a second digital signal when a control signal signifies that no ringing signal is to be produced;

said digital-to-analog converter being connected to the output of said digital signal generator and being adapted to convert the digital signals produced thereby to analog signals corresponding thereto;

said amplifying circuit means being connected to the output of said digital-to-analog converter to receive said analog signals and comprising a glass-A amplifier stage followed by a direct-coupled class-B power amplifier stage; the class-B amplifier stage producing at its output a ringing signal when a received analog signal corresponds to said first digital signal and reverting to a quiescent state of low power consumption in which it produces no ringing signal when a received analog signal corresponds to said second digital signal; the output of the class-B amplifier stage being the output of the ringing signal generator.

4,584,577

ANGULAR POSITION SENSOR

Andrew W. Temple, Milford-on-Sea, Lymington, England, assignor to Brookes & Gatehouse Limited, England

Filed Oct. 17, 1983, Ser. No. 542,659

Claims priority, application United Kingdom, Oct. 20, 1982, 8230004

Int. Cl.[4] G08C 19/06

U.S. Cl. 340—870.32 12 Claims

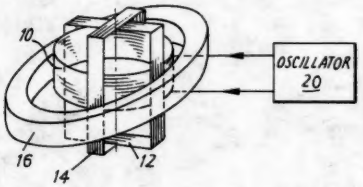
9. An angular position sensor comprising:

receiver means for receiving an electromagnetic signal;

signal means coupled to said receiver means for generating two output signals each of which represents the vector component of said electromagnetic signal in one of two intersecting inclined directions;

means for generating an alternating magnetic field; said means for generating including two coils whose central axes are inclined to one another at the same angle as said inclined directions;

a body rotatable about an axis perpendicular to the plane defined by said intersecting inclined directions; said body being asymmetrical about its axis of rotation; at least a portion of



said body lying outside said plane and being of material such that it distorts said magnetic field; and

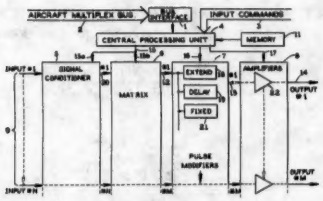
a sensing coil disposed within said magnetic field; whereby the emf induced in said sensing coil is dependent on the position of said body relative to said magnetic field and, hence, on the direction from which said electromagnetic signal approaches said receiving means.

4,584,578

PROGRAMMABLE INTERFERENCE BLANKING SYSTEM

Frank Brauns, Deerfield Beach; Charles S. Walters, Plantation, and Thomas W. Stuff, Delray Beach, all of Fla., assignors to Novatronics, Inc., Pompano Beach, Fla.

Filed Mar. 18, 1983, Ser. No. 476,771
Int. Cl.⁴ G01S 7/28
U.S. Cl. 343—5 R **19 Claims**



16. A blanking system for use with a plurality of RF transmitters and receivers in sufficient proximity to said transmitters that signal interference between them is possible, said blanking system comprising:

a central processing unit having inputs for receiving instructions and blanking commands;

a memory for storing digitally encoded pulse treatment parameters, said memory being operatively coupled to said central processing unit;

a digitally controlled switching matrix having a plurality of rows operatively connected to receive input pulses from RF transmitters, a plurality of columns operatively connected to respective pulse output terminals, and a plurality of binary logic devices at the crosspoints between said rows and columns, each of said logic devices having a first input connected to a corresponding row and an output connected to a corresponding column;

a plurality of link control circuits each having two inputs and having an output connected to a second input of a corresponding binary logic device in the switching matrix;

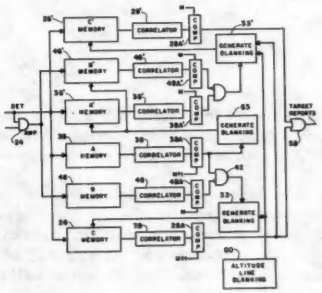
and row address column decoders operatively connected between said central processing unit and the inputs of said link control circuits to operate the latter in accordance with parameters stored in said memory, whereby to connect certain rows to certain columns for passing RF transmitter pulses to the corresponding pulse output terminals.

4,584,579

MEDIUM PRF PULSE DOPPLER RADAR PROCESSOR FOR DENSE TARGET ENVIRONMENTS

Edward L. Frost, Arnold, and Leslie Lawrence, Columbia, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 1, 1983, Ser. No. 547,609
Int. Cl.⁴ G01S 7/28
U.S. Cl. 343—17.1 R **3 Claims**



1. In a single channel radar receiver responsive to return signals that include discrete sidelobe clutter returns, and having first correlator means for correlating the returns with an (M+1)-out-of N comparison to provide a first correlation signal A, means for thresholding the returns over a predetermined period of time, second correlator means for correlating such thresholded return with an M-out-of-N comparison to provide a second correlation signal B, first logic means using the first and second correlation signals A and B to provide a signal used to detect and blank the discrete sidelobe returns, and having third correlator means to correlate the blanked returns with an (M+1)-out-of-N comparison over a predetermined number of range cells to provide a third correlation signal C indicative of the unambiguous range of any target return signals;

fourth correlator means for correlating the returns with an M-out-of-N comparison to provide a fourth correlation signal A′, fifth correlator means for correlating said thresholded return with an M-out-of-N comparison to provide a fifth correlation signal B′, means using said third correlation signal A to provide blanking to said fourth and fifth correlation means, second logic means using the fourth and fifth correlation signals A′ and B′ to provide a signal used to detect and blank the discrete sidelobe returns, and having sixth correlations means to correlate the blanked returns with an M-out-of-N comparison over a predetermined number of range cells to provide a sixth correlation signal C′ indicative of the unambiguous range of any target return signals;

and OR gate means having inputs of the third and sixth correlation logic signals C and C′ and an output for target reports.

4,584,580

APPARATUS FOR REJECTING JAMMING WAVES

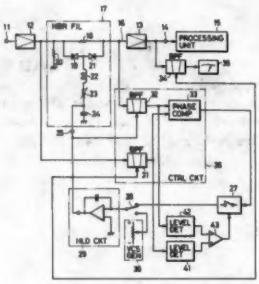
Teruhisa Fujino, Kawasaki; Kenichi Chiwaki, Chiba, and Sadatoshi Narazaki, Yachiyo, all of Japan, assignors to Kabushiki Kaisha Koden Seisakusho, Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,548

Claims priority, application Japan, Mar. 29, 1982, 57-50649; Mar. 29, 1982, 57-50650

Int. Cl.[4] G01S 7/36

U.S. Cl. 343—18 E 14 Claims



1. An apparatus for rejecting a jamming wave, comprising:

(a) a narrow-band rejection filter inserted in series in a reception signal path and having a rejection center frequency variable by a control signal;

(b) control means connected to input and output termianls of said narrow-band rejection filter for detecting any difference between said rejection center frequency of said narrow-band rejection filter and the frequency of the jamming wave to be rejected based on signals from said input and output terminals;

(c) first and second level detectors for amplifying and rectifying said signals from said input and output terminals respectively and for detecting the levels of said signals;

(d) a level comparator connected to output terminals of said first and second level detectors for receiving the detected levels therefrom; receiving the detected levels therefrom;

(e) hold means for receiving and holding a signal indicative of the frequency difference detected by said control means and for supplying the signal held therein to said narrow-band rejection filter as said control signal;

(f) a switch inserted between an input terminal of said hole means and an output terminal of said control means and controllable by an output from said level comparator for turning said siwthc on when an output from said first level detector is larger than an output from said second level detector and for turning said switch off when the output from said first level detector is smaller than the output from said second level detector; and

(g) level lowering means for lowering the level of the output from said first level detector below the level of the output from said second level detector when the inputs to said first and second level detectors are substantially zero;

(h) each of said first and second level detectors comprising an operational amplifier, said level lowering means comprising power supply means for applying voltages to power supply terminals of said operational amplifiers to determine the minimum output levels of said operational amplifiers, the power supply voltage applied to said first level detecter being smaller than the power supply voltage applied to said second level detector, and said first level detector having a gain smaller than the gain of said second level detector dependent on an amount of attentuation by said narrow-band rejection filter.

4,584,581

BEAM FORMING NETWORK FOR MULTIBEAM ARRAY ANTENNA

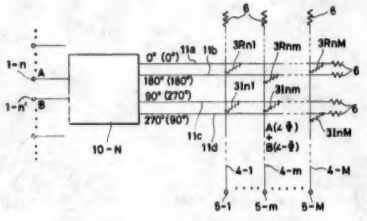
Tasuku Teshirogi, Koganei, Japan, assignor to Radio Research Laboratories, Ministry of Posts and Telecommunications, Koganei, Japan

Filed Apr. 5, 1982, Ser. No. 365,265

Claims priority, application Japan, Oct. 27, 1981, 56-170673

Int. Cl.[4] H01Q 3/40

U.S. Cl. 343—373 18 Claims



1. A beam forming network, comprising:

a plurality of quadrature phase splitters, each splitter being provided with a pair of input terminals for receiving two input signals, and means for combining and phase-shifting said two input signals so as to output two sets of four phase signals which are shifted by a phase of $\pi/2$ per input signal;

a single set of four distribution lines for receiving said two sets of four phase output signals from each of said quadrature phase splitters;

a plurality of output summing lines provided with output terminals; and

a plurality of coupling resistors for connecting said distribution lines to said output summing lines.

4,584,582

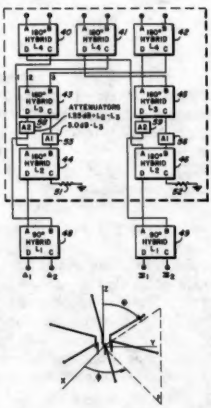
MULTI-MODE DIRECTION FINDING ANTENNA

Archer D. Munger, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1981, Ser. No. 297,818

Int. Cl.[4] H01Q 3/22, 3/24, 3/26

U.S. Cl. 343—373 11 Claims



nal axis with the axes of all adjacent elements forming equal angles;

(b) mode forming means having an input for each of said elements and two mode outputs, one mode output for a sum mode signal and one mode output for a difference mode signal; and

(c) coupling means coupling each one of said elements to a different one of the inputs of said mode forming means.

4,584,583

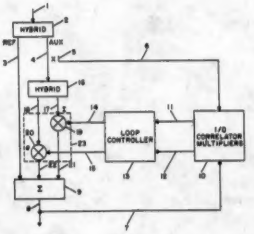
LMS ADAPTIVE LOOP MODULE

Paul S. Dennis, Jr., Northport; Anthony M. Kowalski, Miller Place, and Michael Weiner, Huntington Station, all of N.Y., assignors to Hazeltine Corporation, Commack, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,576

Int. Cl.⁴ G01S *3/16, 3/28*

U.S. Cl. 343—380 **4 Claims**



1. A module for cancelling undesired signals received with a desired signal by a single antenna and having an output port for providing an output signal, said module for use in combination with other similar modules, said module comprising:

(a) First means for providing the desired signal and any undesired signal received by the single antenna with the desired signal;

(b) A first hybrid having an input port coupled to said first means and having a reference output port and an auxiliary output port;

(c) A second hybrid having an input port coupled to the auxiliary output port and providing an in-phase output signal and a quadrature output signal;

(d) An in-phase correlator multiplier having a first input port coupled to the auxiliary output port and a feedback input port coupled to the apparatus output port, said in-phase correlator multiplier providing an output signal;

(e) A quadrature correlator multiplier having a first input port coupled to the auxiliary output port and a feedback input port coupled to the apparatus output port, said quadrature correlator multiplier providing an output signal;

(f) Means for providing an in-phase drive signal and a quadrature drive signal corresponding to the output signals of the in-phase and quadrature correlator multipliers, respectively;

(g) Means for weighting the in-phase and quadrature output signals provided by the second hybrid in response to the in-phase and quadrature drive signals, respectively; and

(h) Means for summing the weighted in-phase and quadrature output signals and signals provided at the reference output port, said means for summing having the apparatus output port.

4,584,584

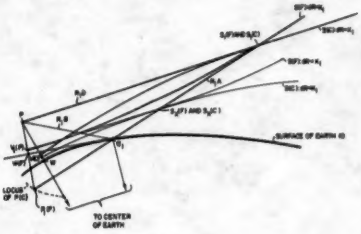
METHOD OF MEASURING RANGE AND ALTITUDE

Isaac E. Kliger, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 21, 1983, Ser. No. 477,034

Int. Cl.⁴ G01S *3/02*

U.S. Cl. 343—451 **4 Claims**



1. The method of operating monopulse receiving systems on airborne platforms at predetermined altitudes and a known distance from each other to determine the range and altitude of an airborne source of radio frequency signals passing to each one of such systems over a direct and an indirect path, such method comprising the steps of:

(a) calculating for selected altitudes of a monopulse receiving system and selected values of the difference, dR, between the direct and indirect paths, hyperbolic lines of position, each one of such lines being indicative of the range and altitude of the airborne source for a given altitude of the monopulse receiving system and a given value of dR;

(b) storing selected values of each one of the lines of position at addressable locations in a store to form sets of pairs of numbers indicative of possible ranges and altitudes of an airborne source, individual pairs of such numbers being addressable by altitude and measured dR in operation;

(c) scanning the monopulse receiving systems in azimuth until a monopulse null is encountered to determine the azimuth of the airborne source and then (i) calculating the range of such source from each one of such systems, and (ii) measuring the value of dR;

(d) addressing the stored selected values of the lines of position by the value of h and dR and determining the stored value of altitude of the airborne source at the range determined by step (c); and

(e) displaying the stored values of range and altitude determined by step (d).

4,584,585

TWO ELEMENT LOW PROFILE ANTENNA

Paul D. Marko, Pembroke Pines; Thomas F. Kneisel, Davie, and Oscar M. Garay, N. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1984, Ser. No. 596,747

Int. Cl.⁴ H01Q *1/24, 1/48*

U.S. Cl. 343—702 **4 Claims**

1. A miniaturized, low profile antenna especially suited for use with hand held, portable electronic apparatus, comprising in combination:

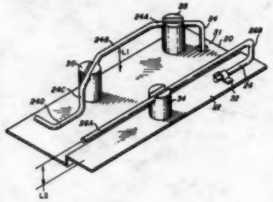
a ground plate having a surface;

an elongated passive element with a longitudinal axis oriented substantially parallel to said ground plate surface and situated at a first given distance above said ground plate surface, said passive element having one end connected to said ground plate surface and the other end standing free; and

an elongated driven element situated substantially adjacent and spaced apart from said passive element in a plane

substantially parallel to said ground plate surface at second given distance,

said driven element having a mid portion oriented substantially parallel to said passive element, a first end portion extending angularly inward from said mid portion to a point constituting the antenna feedpoint, said feedpoint being adjacent to, but isolated from, said ground connection of said passive element, and a second end portion first



extending angularly inward from said mid portion and then parallel to said passive end portion, said second end portion of said driven element being free standing,

said antenna having low impedance coupling between said feedpoint and passive element ground connection and a high impedance coupling between said free standing ends of said passive and driven elements, which couplings may be adjusted to provide a desired operational bandwidth exhibited by the antenna.

4,584,586

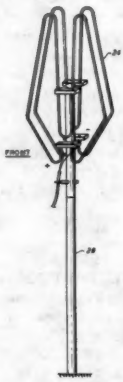
MULTI-TURN LOOP RECEPTION ANTENNA

Louis Kocsi, 25 Palisade Ave., Garfield, N.J. 07026

Filed Nov. 16, 1983, Ser. No. 552,304

Int. Cl.⁴ H01Q *11/12*

U.S. Cl. 343—742 **8 Claims**



1. A multi-turn antenna definable in terms of X, Y and Z coordinates comprising:

an electrically conducting surface having a longitudinal, vertical (Y), major axis, the surface comprising:

an even plurality of discreet open-ended vertical (Y) pairs of hollow, substantially scalene triangular loops symmetric about said vertical (Y) axis and disposed in an XY plane and, further, symmetric about said open ends of each loop,

alternate ends of each loop electrically connected in a YZ plane to its Z-axis adjacent end, the hollow interior of each loop pair comprising a wave guide, each scalene loop pair disposed vertically and parallel to its adjacent loop pair,

whereby an open circuit is maintained in each XY loop pair plane subject only to said YZ plane connections of alternate loop ends, this configuration permitting advantageous electrical current circulation through said double scalene loops, thereby obtaining an electromagnetic geometry having particular effectiveness in signal reception.

4,584,587

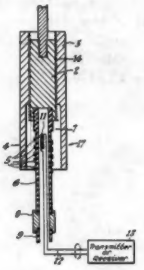
TUNEABLE ANTENNA WITH INDUCTIVE COUPLING AT INPUT

Frank E. Ireland, 7425 SW. 34th St., Miami, Fla. 33155

Filed Sep. 2, 1983, Ser. No. 528,898

Int. Cl.⁴ H01Q *9/24, 1/48*

U.S. Cl. 343—745 **1 Claim**



1. A voltage feed half wave or multiple of a half wave antenna system for use on nonconductive or conductive counterpoise comprising:

a quarter wave matching stub including a tuned or tuneable capacitance and inductance in parallel, said capacitance comprising a skirt around said inductance;

said quarter wave matching stub connected to one end of said half wave radiator to supply operating voltage; and

an inductance coupling means for inductance coupling of said quarter wave matching stub to transfer voltage, said inductance coupling means mounted within said inductance and connectable to a transmitter or receiver.

4,584,588

ANTENNA WITH FEED HORN AND POLARIZATION FEED

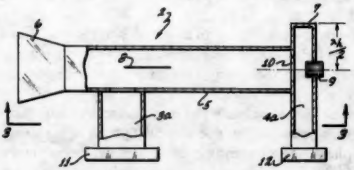
Gunter Möhring, Langenhagen, and Detlef Block, Hanover, both of Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 14, 1983, Ser. No. 551,287

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1982, 3241890

Int. Cl.⁴ H01Q *13/02, 19/13*

U.S. Cl. 343—786 **8 Claims**



1. In an antenna for the transmission and/or receiving of electromagnetic waves and having a parabolic reflector and a

feed horn arranged in the focal area of the reflector, there being a first and a second wave guide, the combination comprising:

a feed tube having an axis, the feed horn being arranged at one end of the tube;

the first wave guide being connected laterally to the feed tube whereby any long dimension of the cross section of the first wave guide extends parallel to the axis of the feed tube;

a short circuiting element disposed inside the feed tube essentially between the connection of the first wave guide to the feed tube and the other end of the feed tube;

the second wave guide having a wide and a narrow side and extending parallel to the first wave guide and being laterally connected with its wide side to the other end of the feed tube, closing the feed tube at that other end such that the wide dimensions of the first and second wave guides at their respective connections are turned by 90 degrees with respect to each other, the wider dimension of the second wave guide extending transversely to the axis of the feed tube accordingly;

means for shortcircuiting the second wave guide at its end; and

trimming means disposed on the second wave guide in axial alignment with the axis of the tube.

4,584,589

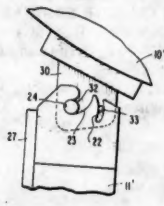
ANTENNA HAVING A RAPID ENGAGEMENT PIVOT JOINT BETWEEN THE ANTENNA REFLECTOR AND SUPPORT STRUCTURE

William F. Bivins, Annandale, and Clifford Allison, Herndon, both of Va., assignors to Radiation Systems, Inc., Sterling, Va.

Filed Jan. 3, 1985, Ser. No. 688,481

Int. Cl.[4] H01Q *1/08*

U.S. Cl. 343—882 **6 Claims**



1. In an antenna of the type comprising an antenna reflector which is pivotally attached to an antenna support structure to permit the elevation of said reflector to be changed, the improvement wherein said reflector is pivotally attached to said support structure by a rapid engagement joint comprising first and second units which may be readily mated with and separated from one another, said first unit being attached to said support structure, and said second unit being separate from said first unit and attached to said reflector, one of said units comprising a first vertically oriented plate having first and second slots therein, each of said slots opening at one end thereof into a horizontal edge of said vertical first plate, the open ends of said slots being spaced from one another along said horizontal edge of said first plate, the other ends of said slots being located respectively at spaced points within said first plate which are remote from said horizontal edge of said first plate, said first slot extending as the arc of a circle between its opposing ends, said second slot being wider than said first slot and being oriented in nonparallel relation to said first slot, said arcuate first slot being concentric with only the said other end of said second slot that is remote from said horizontal edge of said first plate, the other of said units comprising a second vertically oriented plate having a pair of horizontally oriented pins projecting outwardly therefom, one of said pins being a guide pin that is to be inserted into said first slot and the other of said pins being a load bearing pin that is to be inserted into said second slot, the diameter of said load bearing pin being greater than that of said guide pin, said pins on said second plate being laterally spaced from one another bt a distance equal to the distance between each point along said first slot and said other end of said second slot, said first and second units being adapted to be readily engaged with one another for pivotal motion of said reflector relative to said support structure by inserting said load bearing pin into the open end of said second slot, displacing said units to move said first and second plates relative to one another in parallel planes so as to slide said load bearing pin along said second slot until said inserted load bearing pin seats at the remote other end of said second slot, and then angularly displacing said units relative to one another to insert said guide pin into the open end of said first slot for movement along the arcuate path defined by said first slot about the axis defined by said load bearing pin while said load bearing pin remains located at said remote other end of said second slot.

4,584,590

SHEAR MODE TRANSDUCER FOR DROP-ON-DEMAND LIQUID EJECTOR

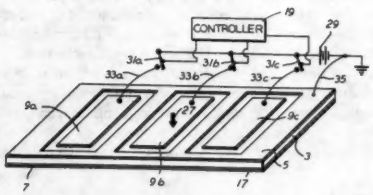
Kenneth H. Fischbeck, Dallas, and Allen T. Wright, Lewisville, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 382,866, May 28, 1982, abandoned.

This application May 20, 1985, Ser. No. 736,513

Int. Cl.[4] G01D *15/16*

U.S. Cl. 346—140 R **26 Claims**



1. In a pressure pulse droplet ejector:

a fluid pressure chamber housing having a portion thereof forming an opening into said chamber,

means extending across said opening to form a deformable wall of said chamber, said means comprising a piezoelectric transducer, the portion of said piezoelectric transducer which is adjacent the perimeter of said portion of said fluid pressure chamber forming said opening being restrained against movement relative to said housing,

said piezoelectric transducer having a polarized portion which is free for reciprocal deformation relative to said housing in the general direction of polarization, the direction of polarization being generally transverse to the direction in which said piezoelectric transducer extends across said opening,

means for applying an electrical field to said polarized portion substantially orthogonal to the polarization field to cause said polarized portion to deform in shear in the general direction of polarization to vary the volume of said chamber.

4,584,591

FASTENING AND CONNECTING ARRANGEMENT FOR PIEZOELECTRIC DRIVING ELEMENTS IN THE WRITE HEADS OF INK WRITING DEVICES

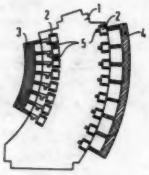
Wilfried Kindler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

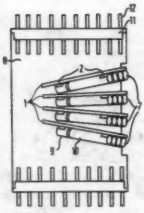
Filed Apr. 1, 1985, Ser. No. 718,612

Claims priority, application Fed. Rep. of Germany, May 16, 1984, 3418202

Int. Cl.[4] G01D *15/18*; H01L *41/08*

U.S. Cl. 346—140 R **3 Claims**





1. A fastening and connecting arrangement of tubular piezoelectric driving elements in the write heads of ink writing devices, comprising, for each group of piezoelectric driving elements, a circuit board, equipped with contact clips disposed in two rows along two opposite borders of the circuit plate, in numbers corresponding to that of the piezoelectric driving elements of the group, the circuit board designed to hold the piezoelectric elements, each row of contact clips being associated with a connector bank whose connecting web is disposable, and a mother board into which several circuit boards equipped with piezoelectric driving elements are plugged.

4,584,592

MARKING HEAD FOR FLUID JET ASSISTED ION PROJECTION IMAGING SYSTEMS

Hsing C. Tuan, and Malcolm J. Thompson, both of Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 13, 1984, Ser. No. 639,983

Int. Cl.[4] G01D *15/06*

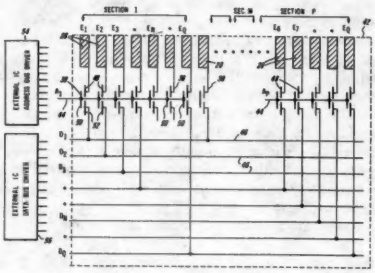
U.S. Cl. 346—159 **12 Claims**

1. A fluid jet assisted electrographic marking apparatus for placing electrostatic charges upon a charge receptor surface in an image-wise pattern, including means for supplying a transport fluid, housing means including an upstream ion generation region and a downstream ion modulation region, said housing means including inlet means for receiving transport fluid from said means for supplying, located upstream of said ion generation region, ion modulation means located at said ion modulation region, and outlet means from which transport fluid exits said housing, said ion modulation means being characterized by comprising

charge storage means, comrising electrically conductive electrodes positioned adjacent the path of said transport fluid in said ion modulation region, for controlling the passage of ions out of said housing, said charge storage means being divided into sections,

charging means for applying predetermined voltages to said sections in accordance with said image-wise pattern,

means for selectively and sequentially coupling said charge storage means in a given section to said charging means and for isolating non-selected sections from said charging



means, whereby said charge storage means in a given section are brought to the predetermined voltage when coupled and hold the predetermined voltage when isolated, for controlling the passage of ions out of said housing, and

said electrodes, said charging means and said means for selectively and sequentially coupling are thin film elements integrally fabricated upon a substrate.

4,584,593

INSULATED-GATE FIELD-EFFECT TRANSISTOR (IGFET) WITH CHARGE CARRIER INJECTION

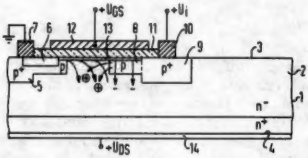
Jenö Tihanyi, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 510,080

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1982, 3224618

Int. Cl.[4] H01L *29/78*

U.S. Cl. 357—23.4 **7 Claims**



1. IGFET assembly, comprising a semiconductor substrate of a given first conductivity type having first and second surfaces, and an IGFET having at least one channel zone of a second conductivity type opposite said given first conductivity type embedded in said first surface of said substrate, a source zone of said first conductivity type embedded in said channel zone, a drain zone adjacent said first surface of said substrate, a drain electrode connected to said second surface of said substrate, a gate electrode disposed above and insulated from said first surface of said substrate, an injector zone of said second conductivity type being embedded in said first surface of said substrate under said gate electrode and being connectible to a voltage source, said injector zone having a surface and having a doping, at least at said surface of said injector zone, causing an inversion layer to be formed at said surface of said injector zone when said IGFET is switched on, and a contact

zone of said second conductivity type embedded in said first surface of said substrate and contacting said injector zone at a common boundary of said contact and injector zones below said gate electrode, said contact zone having a surface and having a higher doping than said injector zone preventing an inversion layer from forming at said surface of said contact zone when said IGFET is switched on.

4,584,594

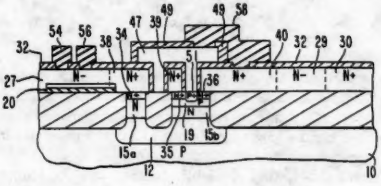
LOGIC STRUCTURE UTILIZING POLYCRYSTALLINE SILICON SCHOTTKY DIODES

Madhukar B. Vora, Los Gatos, and Hemraj K. Hingarh, San Jose, both of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Division of Ser. No. 261,842, May 8, 1981, Pat. No. 4,418,468. This application Sep. 16, 1983, Ser. No. 533,033

Int. Cl.⁴ H01L *29/48, 29/72, 29/04, 23/48*

U.S. Cl. 357—15 **10 Claims**



1. An integrated circuit structure comprising:

a semiconductor body having an upper surface;

a transistor fabricated in the body, the transistor including a first electrode and a second electrode each adjacent the upper surface;

a surrounding region of insulating material inset into the body around the transistor;

an electrically conductive layer of a metal silicide disposed on the surrounding region but not in contact with either the first or the second electrodes;

a first region of polycrystalline silicon disposed on the electrically conductive layer;

a second region of polycrystalline silicon disposed across the body and the surrounding region, a first part of the second region being disposed on the first region and a second part of the second region being disposed on the first electrode, the second part being doped to electrically connect the first electrode to the electrically conductive layer; and

at least one metal electrode disposed on the first part of the second region.

4,584,595

ARRANGEMENT OF FIELD EFFECT TRANSISTORS FOR OPERATION IN THE SWITCHED MODE AT HIGH FREQUENCY

Neil A. Kammiller, Lakewood, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Feb. 7, 1985, Ser. No. 699,034

Int. Cl.⁴ H01L *27/02, 27/10, 29/50*

U.S. Cl. 357—41 **12 Claims**

1. A circuit arrangement for semiconductor devices comprising:

(a) a first group of N semiconductor devides wherein N is a number greater than one;

(b) a first group of N+1 metallic conductors, N of which are each associated with a respective one of said N semiconductor devices, one end of each of N of said N+1 conductors being connected to the same electrode of each of said N semiconductor devices; and

(c) a first central metallic conductor having a predetermined shape, the other end of said N associated conductors and one end of the Nth+1 conductor of said N +1 conductors each being connected to said first central conductor, said shape being such tht each of said N semiconductor devices

are mechanically equidistant from said Nth+1 conductor one end.

4,584,596

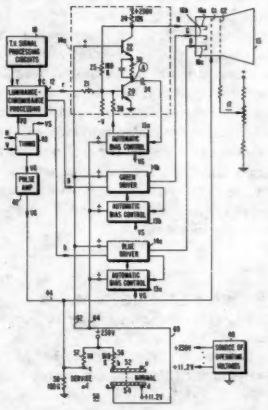
TELEVISION RECEIVER ALIGNMENT SYSTEM

James C. Tallant, II, Noblesville, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 13, 1984, Ser. No. 600,326

Int. Cl.⁴ H04N *17/02, 17/04, 9/20*

U.S. Cl. 358—10 **7 Claims**



1. In a video signal processing system with a video channel including a video output amplifier and an image reproducing kinescope having a cathode electrode responsive to video signals coupled thereto from said video output amplifier, a G1 grid electrode, and a G2 screen grid electrode; bias alignment apparatus comprising:

means for providing a normal bias voltage to said cathode electrode in a normal operating mode of said system;

means for providing a normal bias voltage to said G1 grid electrode in said normal operating mode;

means for inhibiting normal coupling of video signals to said cathode electrode in a service operating mode of said system;

means for modifying said normal G1 grid bias voltage in said service operating mode; and

means for adjusting the bias of said G2 screen grid in said service mode.

4,584,597

METHOD FOR ENCODING A DIGITAL COLOR VIDEO SIGNAL BY RATE COMPRESSION

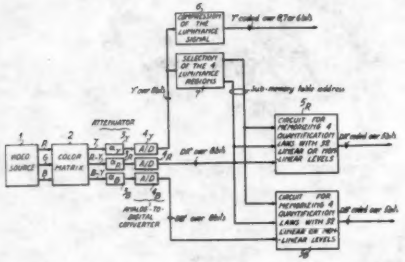
Jacques Guichard, 8-10, rue des Morillons, 75015 Paris, France

Filed Apr. 4, 1984, Ser. No. 597,066

Claims priority, application France, Apr. 13, 1983, 83 06025

Int. Cl.[4] H04N *11/04, 11/06*

U.S. Cl. 358—13 **10 Claims**


VIDEO SOURCE
COLOR MATRIX
ATTENUATOR
A/D
ANALOG-TO-DIGITAL CONVERTER
SELECTION OF THE 4 LUMINANCE REGIONS
CIRCUIT FOR PREPARATION & QUANTIFICATION LAWS WITH 32 LINEAR OR NON-LINEAR LEVELS
CIRCUIT FOR PREPARATION & QUANTIFICATION LAWS WITH 32 LINEAR OR NON-LINEAR LEVELS

1. A method for encoding a digital luminance signal and two digital color difference signals having high bit-rates and composed of first words representing color picture elements into an encoded digital luminance signal and two encoded digital color difference signals having low bit-rates and composed of second words, wherein a predetermined peak-to-peak luminance amplitude is split into luminance regions that are each associated with two tables of second words of said two encoded signals respectively representative of predetermined variation sub-intervals in the two color differences for luminances lying within one of said luminance regions, and wherein said first words of said two color difference signals representing a picture element are encoded into two second words that are selected from the two respective tables associated with the luminance region including the luminance of said picture element and that are representative of two sub-intervals in the luminance region respectively including the two color differences of said picture element.

4,584,598

ELECTRONIC CAMERA

Ken Kutaragi, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 3, 1983, Ser. No. 500,822

Claims priority, application Japan, Jun. 10, 1982, 57-99751

Int. Cl.[4] H04N *9/73*

U.S. Cl. 358—29 **9 Claims**

1. An electronic camera for use in incident light from various sources comprising:

means for producing a color image signal corresponding to an object in a field of view of the camera and having an adjustable white balance;

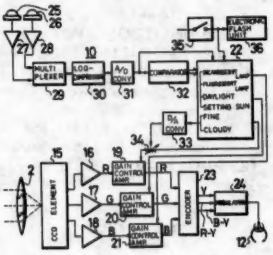
means for recording said color image signal on a record medium;

first light receivig means for generating a first signal in response to the luminous intensity of said incident light in the mercury spectrum;

second light receiving means for generating a second signal in response to luminous intensity of said incident light in the near infrared spectrum; and

means responsive to the relative values of said first and second signals for correspondingly adjusting said white balance to adapt the camera for use with incident light from a respective one of said source, said means for adjusting including means for separately receiving said first and second signals;

wherein said means for adjusting the white balance sets the latter for light from a fluorescent lamp when said first signal corresponds to a high luminous intensity in said mercury spectrum and said second signal corresponds to a low luminous intensity in said near infrared spectrum;



said means for adjusting the white balance sets the latter for light from an incandescent lamp when said first signal corresponds to a low luminous intensity in said mercury spectrum and said second signal corresponds to a high luminous intensity in said near infrared spectrum; and

said means for adjusting the white balance sets the latter for natural light when said first and second signals correspond to high luminous intensities in both said mercury spectrum and said near infrared spectrum.

4,584,599

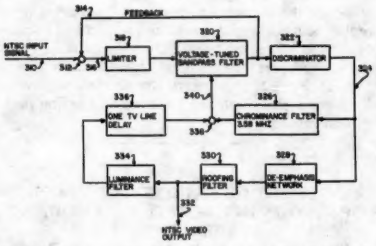
SIGNAL TO NOISE RATIO ENHANCEMENT USING BASEBAND SIGNALS IN AN FM TELEVISION SYSTEM

Joseph G. Mobley, II, Dunwoody, Ga., assignor to Scientific Atlanta, Inc., Atlanta, Ga.

Filed Dec. 19, 1984, Ser. No. 683,680

Int. Cl.[4] H04N *5/44*

U.S. Cl. 358—36 **12 Claims**



1. An apparatus for improving the signal-to-noise ratio of a television signal angle modulated with line and field scanned luminance information, comprising:

limiter means receiving the television signal, for limiting the amplitude of the television signal to a predetermined value;

a voltage tuned bandpass filter, having a center frequency tunable by a tuning signal, to filter the limited signal from said limiter means;

discriminator means for demodulating the filtered signal;

feedback means for delivering the demodulated luminance information to said voltage tuned bandpass filter as the tuning signal, said feedback means comprising delay means for delaying the luminance information by one line.

4,584,600

DIGITAL FILTER FOR THE CHROMINANCE CHANNEL OF A COLOR-TELEVISION SET

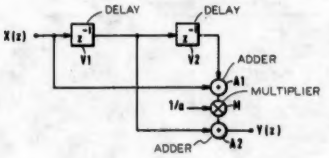
Peotr Baker, Allington, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sep. 22, 1983, Ser. No. 534,730

Claims priority, application European Pat. Off., Oct. 6, 1982, 82710046.2

Int. Cl.⁴ H04N 9/64

U.S. Cl. 358—40 **12 Claims**



1. A digital filter for use in a digital chrominance channel comprising:

an input terminal;

an output terminal;

at least one adder;

a multiplier having a multiplicand factor of 1/a wherein "a" is a presetable number of which is constant during operation of said digital filter;

and a plurality of delay elements each providing a delay equal to one-fourth of the period of the chrominance-subcarrier reference frequency fc;

wherein the frequency of the clock signal of the digital filter is four times the frequency fc;

said at least one adder, said multiplier, and said plurality of delay elements being interconnected to provide a transfer function T(z) between said input and output terminal wherein $T(z)=1/a+z^{-1}+z^{-2}/a$ where z is the variable of the z plane.

4,584,601

CIRCUIT PROVIDING GAMMA, COLOR AND TEMPERATURE COMPENSATION FOR THERMAL PRINTER

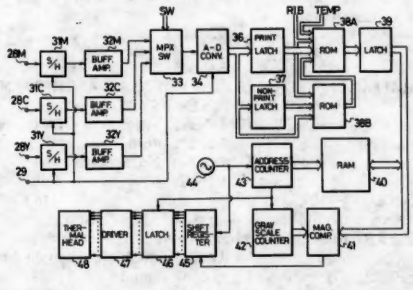
Masakuni Suzuki, Yokohama; Sadao Maeyama, Katsuura; Kiyoshi Arai, Higashikurume; Yoshio Kaneko, Chohfu, and Shohgo Fujito, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 16, 1983, Ser. No. 532,843

Claims priority, application Japan, Sep. 20, 1982, 57-163637

Int. Cl.⁴ G03F 3/08; H04N 1/46

U.S. Cl. 358—80 **15 Claims**



9. A color signal processing circuit for use with a color thermal printer of the kind having a thermal head, a print medium, and a ribbon having individual segments formed of different dye colors arranged therebetween for printing a color image of a video frame formed of a plurality of horizontal scan lines; said circuit comprising:

means receiving primary color data signals from said video frame and a control signal indicating the dye color of said ribbon that is adjacent said thermal head for producing a multiplexed color data signal in response to said control signal, such that the color data signal corresponding to said dye color indicated by said control signal is arranged as an analog print signal in the center with the other color data signals arranged in a time-sharing manner as analog non-print signals at the sides of said print signal;

means for converting said multiplexed color data signal into a digital multiplexed color data signal including a digital print signal corresponding to said analog print signal and digital non-print signals corresponding to said analog non-print signals;

a first latch circuit for storing the digital print signal;

a second latch circuit for storing a digital non-print signal;

compensation read-only memory means connected to be addressed outputs from said first and second latch circuits and containing a plurality of print signal level converting tables and being connected to receive an information signal indicating the dye color of said ribbon adjacent to said thermal head so that one of said plurality of level converting tables is selected for producing a level converted output signal based upon a selected table and output addresses from said first and second latch circuits;

storage means receiving said level converted output signal from said compensation read-only memory means for storing a plurality of level converted output signals constituting a vertical column of said horizontal scan lines of said video frame;

gray scale counter means; and

pulse width modulation means jointly responsive to said storage means and said gray scale counter means for producing a pulse width modulated signal for energizing said thermal head.

4,584,602

POLLING SYSTEM AND METHOD USING NONDEDICATED TELEPHONE LINES

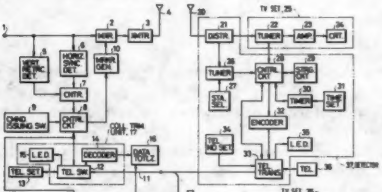
Akira Nakagawa, Saitama, Japan, assignor to Pioneer Ansafone Manufacturing Corporation, Saitama, Japan

Filed Nov. 7, 1983, Ser. No. 549,519

Claims priority, application Japan, Nov. 8, 1982, 57-195715; Dec. 10, 1982, 57-216586; Dec. 10, 1982, 57-216587; Dec. 10, 1982, 57-216588

Int. Cl.⁴ H04N 17/00; H04M 11/00

U.S. Cl. 358—84 **18 Claims**



1. A data collecting system comprising a plurality of receiving stations, each receiving station including: a tuner connected to an antenna; memory means for temporarily storing data supplied from an apparatus being used when said tuner receives a marker signal; timing means for performing a timing operation when said marker signal is received; means for vari-

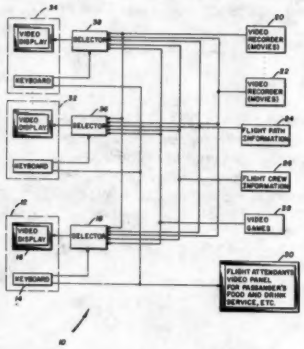
ably setting a timing period of said timing means; means for automatically effecting a telephone call after said timing period set by said setting means has elapsed, said means for automatically effecting a telephone call including an automatic transmitter in each receiving station and means for causing a i-th automatic telephone transmitter at a corresponding i-th one of said plurality of receiving stations to commence a telephone call, in accordance with said timing period, at an i-th time beginning a predetermined period before an (i−1)th automatic telephone transmitter at a corresponding (i−1)th one of said plurality of receiving stations terminates data transmission to a central station and releases a telephone circuit, whereby a call signal from said i-th one of said automatic telephone transmitters arrives at said central station immediately after said (i−1)th automatic telephone transmitter releases said telephone circuit; means for setting a telephone number of said central station to be called by said means for automatically effecting a telephone call; an encoder for encoding data stored by said memory means; and means for sending out said data to said central station through a telephone circuit.

4,584,603

AMUSEMENT AND INFORMATION SYSTEM FOR USE ON A PASSENGER CARRIER

Elden D. Harrison, 674 Shore Dr., Joppa, Md. 21085

Filed Oct. 19, 1984, Ser. No. 662,479
Int. Cl.⁴ H04N *7/00*; A47C *762*
U.S. Cl. 358—86 **8 Claims**



1. An amusement and information system for use on a passenger carrier including:

a plurality of seats, each having a seat rear, on the passenger carrier;

a plurality of video displays, each mounted integral with and parallel to a corresponding rear of a single seat of the plurality of seats;

a plurality of keying means, each connected to a corresponding single video display of the plurality of video displays, for actuating the video means; and

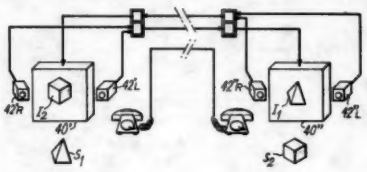
a plurality of positionable, clear material trays, each of the trays connected to a corresponding single seat rear of the plurality of seats, wherein: in a first position a single tray covers the corresponding single video means and through which the corresponding single video means is visible; and with the single tray in a second position, the corresponding single video means is directly visible.

4,584,604

PROCESS AND APPARATUS FOR THE DISPLAY OF RELIEF MOVING PICTURES

Jacques Guichard, 8, rue des Morillons, 75015 Paris, and Alain Poirier, 82 rue de la République, 92190 Meudon, both of France

Filed Jul. 26, 1983, Ser. No. 517,361
Claims priority, application France, Jul. 29, 1982, 82 13242
Int. Cl.⁴ H04N *13/00*
U.S. Cl. 358—92 **24 Claims**



1. A process for the display of relief moving pictures, comprising the steps of:

(a) transforming the optical image of a scene viewed along a first line of sight into a first sequence of electrical signals representing light intensity variation;

(b) transforming the optical image of said scene viewed along a second line of sight into a second sequence of electrical signals representing light intensity variation;

(c) transmitting said first sequence of electrical signals to a first plurality of vertical columns of display elements for controlling the condition of said display elements;

(d) transmitting said second sequence of electrical signals to a second plurality of vertical columns of display elements for controlling the condition of said display elements;

(e) passing light through said display elements and onto a focal plane of a lenticular frame comprising a plurality of regularly spaced, vertical cylindrical lenses with front convex diopter, to form corresponding first and second pluralities of image elements,

wherein said image elements of said first plurality of image elements are formed by light projected through said respective display elements of said first plurality of vertical columns, said image elements of said second plurality of image elements are formed by light projected through said respective display elements of said second plurality of vertical columns, said first plurality of image elements and said second plurality of image elements are arranged in an alternating sequence of columns in said focal plane of said lenticular frame, and the spacing between centers of adjacent image elements is greater than the spacing between centers of adjacent lenses such that said image elements form an image in said focal plane which is larger than said lenticular frame.

4,584,605

DIGITAL HYSTERESIS FOR VIDEO MEASUREMENT AND PROCESSING SYSTEM

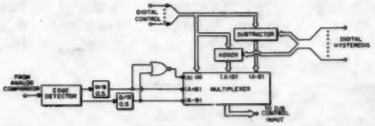
John A. Odozynski, Topsfield, Mass., assignor to GTE Communication Systems Corporation, Stamford, Conn.

Filed Nov. 2, 1983, Ser. No. 548,113
Int. Cl.⁴ H04N *7/18*
U.S. Cl. 358—107 **18 Claims**

1. In a signal processing system including circuitry for developing a REFERENCE voltage derived from an input signal, a D/A converter having the REFERENCE signal applied to a REFERENCE input and a multibit digital CONTROL signal applied to a CONTROL input so as to develop a THRESHOLD signal at an output, said THRESHOLD signal equivalent to a predetermined fraction of the REFERENCE signal as determined by the CONTROL signal, and a comparator sensi-

tive to the relative amplitudes of the input signal and the THRESHOLD signal:

A digital hysteresis circuit coupled to an output of the comparator for at least momentarily varying the THRESHOLD



signal in response to transitions in the input signal, a transition herein regarded as a point at which the input signal becomes either greater than the then existing THRESHOLD signal, that is, a (B/W) transition, or less than the then existing THRESHOLD signal, that is, a (W/B) transition.

4,584,606

IMAGE PICKUP MEANS

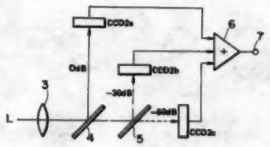
Tatsuo Nagasaki, Musashino, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Aug. 31, 1984, Ser. No. 646,283

Claims priority, application Japan, Sep. 1, 1983, 58-160916; Sep. 1, 1983, 58-160917

Int. Cl.[4] H04N *5/30*

U.S. Cl. 358—209 **29 Claims**



1. Image pickup means comprising:

light intensity controlling means for logarithmically varying the intensity of light incident on said image pickup means and simultaneously transmitting a plurality of light outputs of logarithmically differing intensities;

a plurality of image pickup devices each simultaneously receiving a respective one of said plurality of light outputs and converting said plurality of light outputs into a plurality of electrical signals each corresponding in intensity to respective ones of said light outputs; and

adding means in operable connection with outputs of said plurality of image pickup devices for simultaneously adding said plurality of electrical signals and outputting an output signal corresponding in intensity with said incident light.

4,584,607

PHOTOELECTRIC ELEMENT CONTROL SYSTEM

Hideyuki Miyazawa, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Apr. 16, 1984, Ser. No. 600,475

Claims priority, application Japan, Apr. 14, 1983, 58-65974

Int. Cl.[4] H04N *5/30, 1/024*

U.S. Cl. 358—209 **7 Claims**

1. A system for controlling the operation of a photoelectric element, comprising:

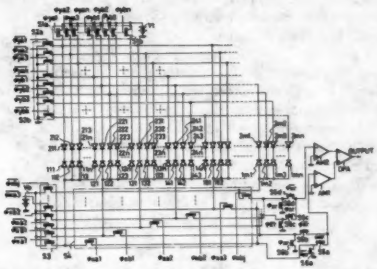
a charge accumulating unit having first and second ends and including a photoelectric element and a blocking diode connected to said photoelectric element;

first voltage applying means for applying a first voltage to said first end of said charge accumulating unit;

switching means connected between said first end of said charge accumulating unit and a signal output terminal;

second voltage applying means for applying a second voltage to said second end of said charge accumulating unit; and

first control means for controlling said first and second voltage applying means and said switching means for selectively establishing a charge accumulation mode and a



charge read out mode for said charge accumulating unit, whereby a plurality of charge accumulating and charge read out operations are carried out during a single signal read out operation and at least two charge accumulating time periods are used thereby outputting a signal in accordance with read out charge at a first charge accumulating time period and read out charge at a second charge accumulating time period.

4,584,608

SOLID STATE IMAGE PICKUP DEVICE

Mitsuo Soneda, Zama; Toshikazu Maekawa, Ebina, and Takaji Ohtsu, Hatano, all of Japan, assignors to Sony Corporation, Tokyo, Japan

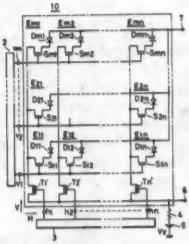
PCT No. PCT/JP83/00108, § 371 Date Dec. 5, 1983, § 102(e) Date Dec. 5, 1983, PCT Pub. No. WO83/03729, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 9, 1983, Ser. No. 562,588

Claims priority, application Japan, Apr. 10, 1982, 57-60097

Int. Cl.[4] H04N *3/14*

U.S. Cl. 358—212 **1 Claim**



1. A solid state image pickup device comprising a plurality of image pickup picture units (E_{11} to E_{mn}) arrayed in horizontal and vertical rows and composed of a first plurality of switching elements (S_{11} to S_{mn}) and a plurality of photoelectric transducers (D_{11} to D_{mn}:24) electrically connected to said first plurality of switching elements (S_{11} to S_{mn}), and each of said first plurality of switching elements (S_{11} to S_{mn}) composed of enhancement-mode insulated-gate field-effect transistors and a second plurality of switching elements (T'_1 to T'_n) connected in common to the respective vertical rows of said first plurality

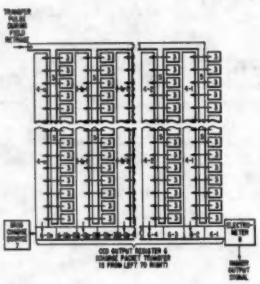
of switching elements (S_{11} to S_{mn}) in said image pickup picture units (E_{11} to E_{mn}) and each of said second plurality of switching elements composed of a depletion-mode insulated-gate field-effect transistor, and an arrangement wherein the horizontal rows of said first plurality of switching elements (S_{11} to S_{mn}) in the image pickup picture units (E_{11} to E_{mn}) are selectively energizable and said second plurality of switching elements (T'_1 to T'_n) are selectively energizable to deliver signals based on signal charges generated by said plurality of photoelectric transducers (D_{11} to D_{mn}) through said first and second plurality of switching elements (S_{11} to S_{mn}, T'_1 to T'_n) so as to produce an image pickup signal output and wherein said second plurality of switching elements (T'_1 to T'_n) which comprise depletion-mode insulated-gate field-effect transistors have their sources respectively connected to the sources connected in common of the vertical rows of said plurality of enhancement-mode insulated-gate field-effect transistors which constitute said first switching elements (S_{11} to S_{mn}) in said plurality of image pickup picture units (E_{11} to E_{mn}), and the drains of said plurality of said depletion mode transistors connected in common to an output terminal (6).

4,584,609

PARALLEL-INPUT/SERIAL OUTPUT CCD REGISTER WITH CLOCKING NOISE CANCELLATION, AS FOR USE IN SOLID-STATE IMAGERS

John J. Klein, Westwood, and Michael J. Cantella, Winchester, both of Mass., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 15, 1985, Ser. No. 723,148
Int. Cl.[4] H04N *3/15*
U.S. Cl. 358—213 **7 Claims**



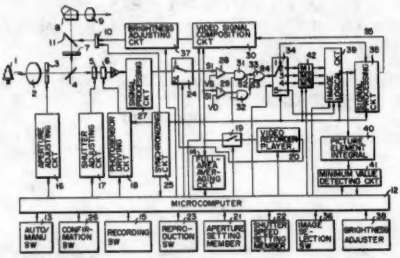
1. A camera comprising:
a solid state imager;
a charge transfer channel disposed in said solid state imager;
a succession of gate electrodes overlying said charge transfer channels to which plural-phase clocking voltages are applied in cyclic order for defining a succession of charge transfer stages in said charge transfer channel and for transferring charge packets from the earlier ones of said succession of charge transfer stages to the later ones;
an electrometer for measuring the amplitudes of charge packets in a final one of said succession of charge transfer stages to generate respective samples of an electrometer response signal;
means for introducing charge packets descriptive of image element intensities into alternate ones of the charge transfer stages of said charge transfer channel during recurrent halts in the application of plural-phase clocking signals to the gate electrodes overlying said charge transfer channel;
means for introducing zero charge levels into the intervening ones of the charge transfer stages of said charge transfer channel during said recurrent halts in the application of plural-phase clocking signals to the gate electrodes overlying said charge transfer channel;
means for separating the samples of said electrometer response signal responsive to charge packets descriptive of image element intensities from the samples not thus responsive; and
means for differentially combining, with each of the samples of said electrometer response signal responsive to charge packets descriptive of image element intensities, an adjacent-in-time sample of said electrometer response signal not thus responsive, thereby to generate samples of a camera output signal.

4,584,610

ELECTRONIC PHOTOGRAPHING APPARATUS

Kazunori Mizokami, Hachioji; Tadashi Kimura, Tokyo; Juro Kikuchi, Hachioji; Akira Tamagawa, Hino; Yutaka Yunoki, Kunitachi, and Kazuo Nakamura, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1984, Ser. No. 580,860
Int. Cl.[4] H04N *5/16*
U.S. Cl. 358—228 **14 Claims**



1. An electronic photographing apparatus, comprising:
electronic photographing means for converting an image to be photographed into a video signal including retracing signal components;
binary coding means for converting the video signal to a binary signal in accordance with the level of the video signal with respect to one of first and second reference levels which are close to
saturated white and black levels of the video signal, said binary signal including an image component representing at least one poor quality portion of an image reproduced from said video signal and corresponding to one of overexposure and underexposure;
signal processing means for converting the binary signal of said binary coding means to a binary video signal; and
display means for displaying the binary image component representing said poor quality portion of the image which is obtained from the binary video signal of said signal processing means as a two-dimensional optical image.

4,584,611

METHOD AND APPARATUS FOR DRIVING A CCD IMAGE SENSOR

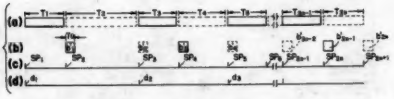
Shunsuke Katahira, Hino, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Aug. 2, 1983, Ser. No. 519,715
Claims priority, application Japan, Aug. 18, 1982, 57-142028
Int. Cl.[4] H04M *1/10*
U.S. Cl. 358—293 **6 Claims**

1. In facsimile type equipment having a CCD image sensor which is exposed to receive and temporarily store image information signals during a first control time period of fixed duration and then output these image information signals during a second control time period, the first and second control time periods alternating with each other as images are successively exposed to said CCD image sensor, a CCD image sensor driving apparatus comprising:

memory means coupled to said CCD image sensor for receiving and temporarily storing only the image information signals generated by said CCD image sensor during successive first control time periods, said memory means disregarding any image information signals generated by said CCD image sensor during successive second control time periods; encoder means coupled to said memory means for successively encoding the image information signals read out from said memory means;

detecting circuit means responsive to the storage condition of said memory means for generating a storage signal representative of the current amount of storage of image information signals in said memory means; and



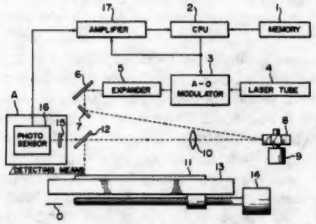
control circuit means coupled to said detecting circuit means and responsive to said storage signal for generating control signals which are coupled to said CCD image sensor to vary the length of each second control time period in accordance with the amount of storage of image information signals in said memory means, the second control time period being greater than or equal to the amount of time required to transfer the image information signals from said memory means to thereby optimize the time period of the second control time period and increase the speed of the facsimile type equipment.

4,584,612

PICTURE RECORDING METHOD

Yoshio Ono, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Feb. 21, 1984, Ser. No. 582,072
Int. Cl.[4] H04N *1/04*
U.S. Cl. 358—285 **3 Claims**



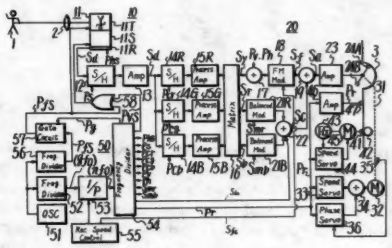
1. In a method for recording a desired picture by, upon sweeping a light beam obtained from a single modulated light beam source and then scanning, with the thus-swept light beam, a recording surface on which a photosensitive material has been coated, branching out a portion of swept light beam by a half-mirror, feeding the branching-out portion of the swept light beam to optical sweep position detecting means, and then modulating the light beam from the light beam source in accordance with a picture signal obtained in synchronization with a position signal produced by the detecting means on the basis of the thus-detected portion of the swept light beam in such a way that one of the thus-modulated light beams is continuously maintained, at least, at such a low light quantity level that is too small to expose the photosensitive material substantially, and in the case of recording the picture the other modulated light beam having a high light quantity level which is sufficient for substantially exposing the photosensitive material, the improvement which comprises that the level of the position signal obtained by the detecting means is changed to a predetermined level in accordance with the level of the picture signal which controls the intensity of the light beam obtained from the light beam source.

4,584,613

APPARATUS FOR RECORDING VIDEO SIGNALS AT A PLURALITY OF DIFFERENT RECORDING SPEEDS

Shinji Amari, Yokohama, and Tomihiro Nakagawa, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 294,139, Aug. 19, 1981, abandoned.
This application Jan. 27, 1984, Ser. No. 574,210
Claims priority, application Japan, Aug. 20, 1980, 55-115018
Int. Cl.[4] H04N *9/491, 5/78*
U.S. Cl. 358—310 **14 Claims**



1. Apparatus for recording a video signal in a plurality of tracks extending obliquely on a longitudinally advanced magnetic tape, said video signal occurring in successive predetermined intervals, said tracks being at a uniform predetermined angle with respect to the longitudinal direction of the tape and having a uniform predetermined pitch and each including one said predetermined interval for representing a standard track format, said apparatus comprising:

means for generating at least one synchronizing signal of variable frequency;

means for determining said variable frequency in accordance with a desired mode of reproduction;

camera means including image transducer means from which said video signal is obtained in correspondence to incident light from an object image projected on said image transducer means, and means for transmitting said video signal from said image transducer at a selected rate;

recording means including recording head means repeatedly scanning across said tape for recording said transmitted signal thereon;

tape drive means for advancing said tape in said longitudinal direction while said head means scans thereacross; and

means for controlling said selected rate and the speeds at which said head means scans across the tape and at which the tape is longitudinally advanced, respectively, in dependence on said variable frequency of the synchronizing signal so that the tracks are always disposed on said tape regardless of the speed of advancement of the tape.

4,584,614

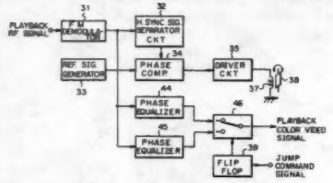
CHROMA SIGNAL PHASE CORRECTION CIRCUITRY TO BE USED IN A COLOR VIDEO INFORMATION PLAYBACK SYSTEM

Toru Akiyama, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokorozawa, Japan

Filed Aug. 12, 1983, Ser. No. 522,704
Claims priority, application Japan, Aug. 17, 1982, 57-142530
Int. Cl.[4] H04N *9/89*
U.S. Cl. 358—312 **4 Claims**

1. A chroma signal phase correction circuitry for use with a

playback system in which a playback color video signal is picked up from a recording medium having a plurality of recording track portions, said playback system generating a jump command signal for moving an information reading point from one recording track portion to another, characterized by a plurality of phase correction channels for a playback color video signal including luminance and chrominance components, each of said phase correction channels having substantially constant frequency-amplitude characteristics throughout a whole frequency range of said playback color video signal



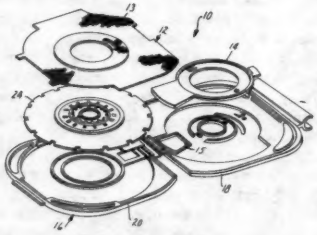
and phase characteristics of each of said phase correction channels being adjusted so that a difference between the phase shift values of said phase correction channels at a frequency of a color subcarrier signal component of said color video signal is equal to a phase difference between said color subcarrier signal component of said color video signals recorded in said recording track portions, and a switching means for selecting in turn one of said phase correction channels for transmitting said playback color video signal in synchronism with each generation of said jump command signal.

4,584,615

BLACK AND WHITE DISC CONSTRUCTION TO RECORD COLOR IMAGES

Richard S. Fisch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 22, 1984, Ser. No. 582,435
Int. Cl.[4] H04N 9/79; G03B 19/18, 25/00
U.S. Cl. 358—332 **10 Claims**



1. A photographic disc construction having an opaque casing with an exposure window in one wall for rotatably housing

(a) a disc of black and white photographic film movable about a fixed axis such that different film portions are moved successively into alignment with the exposure window, and

(b) a separator layer adjacent the emulsion side of said photographic film, the improvement comprising:

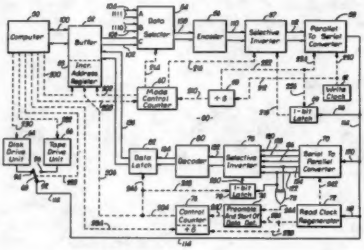
said separator layer being a thin, continuous, thermoplastic, polymeric layer comprising in whole or in part a transparent colored spatial frequency filter which in combination with said film provides an encoded color image in black and white on said film when said film is image-wise exposed to light.

4,584,616

FORMAT FOR STORING DATA ON MAGNETIC MEDIA

David M. Allen, Overland Park, Kans., assignor to Tallgrass Technologies Corporation, Overland Park, Kans.

Continuation of Ser. No. 630,001, Jul. 12, 1984, abandoned. This application Feb. 8, 1985, Ser. No. 699,809
Int. Cl.[4] G11B 5/09
U.S. Cl. 360—48 **11 Claims**



1. In a method for translating information representations expressed in accordance with a first, plural-bit encoding as selected permutations of the binary-valued levels of the individual signals in each group of a first succession of groups of electrical signals into information representations expressed in accordance with a second, differing, plural-bit encoding as correlated permutations of the binary-valued levels of the individual signals in each group of a second succession of groups of electrical signals:

for an initial group of said first succession of groups, producing a corresponding initial group of said second succession of groups, in accordance with a first predetermined mapping of said selected permutations to said correlated permutations;

sensing the binary-valued level of a particular individual signal of said initial group of said second succession of groups;

for a second group of said first succession of groups next following said initial group thereof, producing a corresponding second group of said second succession of groups, in accordance with said first predetermined mapping when the level of said particular individual signal of said initial group of said second succession of groups is sensed as being of one binary-valued level thereof, and in accordance with a second predetermined mapping comprising the "1s" complement of said first predetermined mapping when the level of said particular individual signal of said initial group of said second succession of groups is sensed as being of the other binary-valued level thereof;

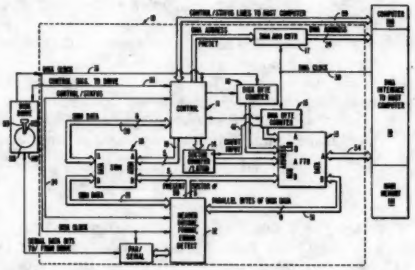
sensing the binary-valued level of said particular individual signal of each group of said second succession of groups following said initial group thereof; and

for each of a plurality of groups of said first succession of groups successively following said second group thereof, producing a corresponding, successively following group of said second succession of groups, in accordance with said first predetermined mapping when the level of said particular individual signal of the last preceding group of said second succession of groups is sensed as being of said one binary-valued level thereof, and in accordance with said second predetermined mapping when the level of said particular individual signal of the last preceding group of said second succession of groups is sensed as being of said other binary-valued level thereof.

4,584,617
METHOD AND APPARATUS FOR IMPROVING THE TRANSFER TIME IN ROTATING DATA STORAGE SYSTEMS

Joel Libove, Berkeley, and Paul V. Wilcox-Baker, San Francisco, both of Calif., assignors to Dual Systems Corporation, Berkeley, Calif.

Filed Sep. 22, 1983, Ser. No. 534,902
Int. Cl.[4] G11B 5/09
U.S. Cl. 360—49 12 Claims



1. In a disk drive controller adapted to be connected between a disk drive and a data and control channel from a computer having a CPU and a main memory, the improvement comprising:

a sector wanted indicator having input terminals, output terminals and a random access memory means with as many addressable storage locations as there are sectors on a track in the disk drive, initializable for any desired combination of wanted sectors according to signals on said data channel, and responsive to disk sector identification numbers applied in any order to its input terminals by producing at its output terminals sector wanted signals indicative of whether data is to be transferred between the data channel and the identified disk sector.

4,584,618
AUDIO RECORDER WHICH CAN PLAY BACK A TEMPORAL CODE IRRESPECTIVE OF THE SPEED OF THE MAGNETIC TAPE

Michel Tassery, Deuil La Barre, France, assignor to Thomson-CSF, Paris, France

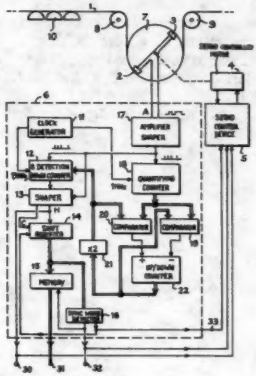
Filed Oct. 9, 1984, Ser. No. 658,557
Claims priority, application France, Oct. 11, 1983, 83 16139
Int. Cl.[4] G11B 5/52
U.S. Cl. 360—70 4 Claims

1. An audio recorder permitting the reading of a temporal code irrespective of the running speed of the tape, this temporal code being recorded on a track separate from the audio track or tracks, comprising:

at least one head for reading the temporal code, in contact with the tape and free to turn along a trajectory sweeping a segment of the temporal code track,

a servo controlled motor by means of which the reading head may be made to turn,

a servo control device controlling the motor so that a displacement of the reading head always occurs with respect to the temporal code track, irrespective of the absolute speed of displacement of the tape,

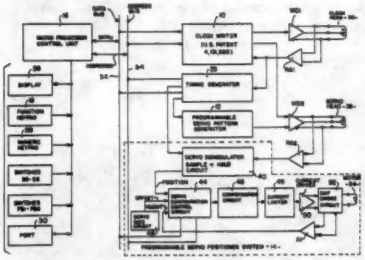


a temporal code decoder connected to the reading head for decoding the temporal code and for supplying servo control signals to the servo control device.

4,584,619
PROGRAMMABLE SERVO PATTERN GENERATOR

Daniel L. Nay, Rancho Palos Verdes, and James K. Berger, Malibu, both of Calif., assignors to Pioneer Research, Inc., Santa Monica, Calif.

Filed Feb. 27, 1984, Ser. No. 584,107
Int. Cl.[4] G11B 5/012
U.S. Cl. 360—75 23 Claims



16. A process for storing a plurality of different servo patterns in the memory of a programmable servo generator, said process including the following steps: entering the different servo patterns into said memory, selecting the different servo patterns from said memory, and writing the servo patterns selected from said memory onto a magnetic disc.

4,584,620

MEASURING CASSETTE FOR CHECKING MAGNETIC HEAD ALIGNMENT IN A TAPE CASSETTE RECORDER

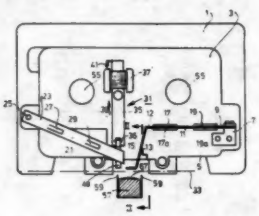
Matthias Döpp, Waldsolms, and Erhard Schmidt, Giessen-Lützelinden, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1984, Ser. No. 594,638

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1983, 3313550

Int. Cl.[4] G11B *5/46, 5/48, 5/42*

U.S. Cl. 360—128 6 Claims



1. A measuring cassette for measuring the position of at least one magnetic head in a magnetic tape cassette recorder with respect to at least one coordinate defined by (i) a tape transport path along which a magnetic tape of a magnetic tape cassette is passed, and (ii) a plane of tape transport along the face of the magnetic head during play operation of the recorder with the head in the play position, said cassette comprising:

a frame,

at least one spring tongue having an end portion connected to the frame, and a free end,

means, including said free end, for scanning a surface of a magnetic head of a cassette recorder into which the measuring cassette has been inserted, which head has been inserted into the measuring cassette in a play position of the recorder, and for bending said tongue a distance proportional to the position of the scanned surface, and

at least one electrical strain gauge arrangement mounted on a surface of the tongue for sensing bending of the tongue.

4,584,621

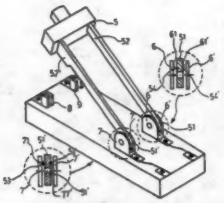
TWO OR MORE THAN TWO POLES SWITCH MEANS HAVING UNEQUAL CONTACT GAPS AND TURN OFF CAPACITIES

Tai-Her Yang, 5-1, Tai-Pin St., Si-Hu Jenn, Chang-Hwa Hsien, Taiwan

Continuation of Ser. No. 573,582, Jan. 23, 1984, abandoned, which is a continuation of Ser. No. 387,142, Jun. 10, 1982, abandoned. This application Nov. 1, 1984, Ser. No. 667,065

Int. Cl.[4] H01H *33/14*

U.S. Cl. 361—3 5 Claims



1. A multi-pole switch for sequentially opening and closing conductive paths comprising:

a first contact point pair defining a gap therebetween;

a second contact point pair defining a gap therebetween; and

opening and closing means for closing said second contact point pair prior to closing said first contact point pair, and opening said second contact point pair after opening said first contact point pair wherein said opening and closing means includes a knife switch comprising:

a first knife switch contact point;

a second knife switch contact point;

a first knife blade for contacting said first contact point, and having an extension portion for controllably contacting said first contact point;

a second knife blade for contacting said second contact point;

first pivot means for securing said first knife blade and about which said first knife blade is pivotable; and

delaying means for retarding the pivoting knife blades while said extension portion of said first knife blade is in contact with said first contact point but said second knife blade is not in contact with said second contact point.

4,584,622

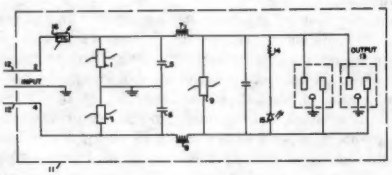
TRANSIENT VOLTAGE SURGE SUPPRESSOR

John J. Crosby, and John J. Napiorkowski, both of Cape Elizabeth, Me., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 9, 1984, Ser. No. 629,288

Int. Cl.[4] H02H *9/04*

U.S. Cl. 361—56 3 Claims



1. A voltage surge suppressor for AC power lines comprising a circuit comprising: an input consisting of a line, a neutral and a ground; a first varistor connected between the line and ground; a second varistor connected between the neutral and ground; a first capacitor in parallel with the first varistor; a second capacitor in parallel with the second varistor; a first choke connected in series with the line after the first varistor and first capacitor; a second choke connected in series with the neutral after the second varistor and second capacitor; a third varistor connected between the line and neutral after the two chokes; a third capacitor in parallel with the third varistor and an output to which electronic equipment can be connected.

4,584,623

ELECTRICAL LOAD PROTECTION DEVICE

Ernesto Bello, Miami Springs, and Joseph F. Mibelli, Miami, both of Fla., assignors to Watsco, Inc., Hialeah, Fla.

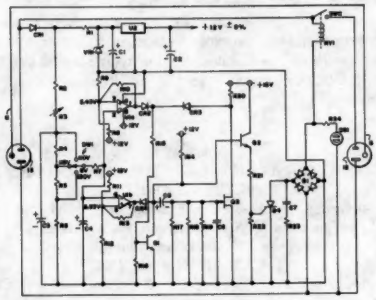
Filed Nov. 7, 1983, Ser. No. 549,308

Int. Cl.[4] H02H *3/20, 3/247*

U.S. Cl. 361—90 7 Claims

1. Electrical circuitry for protecting an electrical load energized by a source of alternating current supply voltage comprising, in combination, switch means for disconnecting the energization supply voltage source from the electrical load, a first means controlled by a predetermined increase in the supply voltage source for actuating said switch means to disconnect said energization supply voltage source from the electrical load, a second means controlled by a predetermined decrease in the supply voltage for actuating said switch means to disconnect said energization supply voltage source from the electrical load, said second means further being controlled by a tempo-

rary interruption of said energization supply voltage source to actuate said switch means for disconnecting said energization supply voltage source from the electrical load for a predetermined minimum interval of time, said first and second means comprising a window comparator circuit, the input voltage to said window comparator circuit being derived as a direct current analog of said energization supply voltage source,



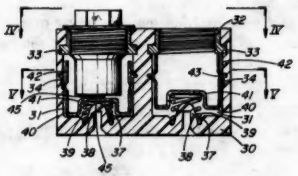
voltage divider means for adjusting said analog input voltage to correspond with a predetermined "normal" energization supply voltage, a regenerative delay circuit controlled by the output of said window comparator circuit, said regenerative delay circuit including a capacitor discharge circuit for establishing said predetermined interval of time for the disconnection of said energization supply voltage source from the electrical load.

4,584,624

STATION PROTECTOR FOR TELECOMMUNICATIONS SYSTEMS

William W. Hines, Arlington Heights, Ill., assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 10, 1984, Ser. No. 679,634
Int. Cl.[4] H02H 3/22
U.S. Cl. 361—119 **14 Claims**



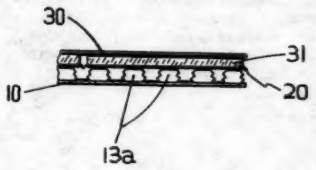
1. A station protector comprising an insulating base; at least one well extending in said base, said well apex at a top end; a metal basket member in said well, said basket including a base and a plurality of cantilever fingers extending up from the basket base; an annular metal insert in a peripheral wall of said well and means for connecting a line conductor to said annular insert, said fingers in sliding contact with the insert; a metal collar at the top end of said well and means for connecting a ground conductor to said collar; a compression spring positioned between said base of said basket member and the bottom of said well, said spring biasing said basket member to push upper ends of said cantilever fingers into contact with said metal collar; the arrangement such that on inserting an arrestor module assembly into said metal collar, an electrode of the arrestor module contacts said base of said basket member and pushes the basket member down against said spring whereby said cantilever fingers are moved out of contact with said collar.

4,584,625

CAPACITIVE TACTILE SENSOR

Nelson R. Kellogg, c/o Program in History of Science, 220 Palmer Hall, Princeton University, Princeton, N.J. 08540

Filed Sep. 11, 1984, Ser. No. 649,312
Int. Cl.[4] H01G 7/00; B25J 3/00; A61F 1/06
U.S. Cl. 361—283 **8 Claims**



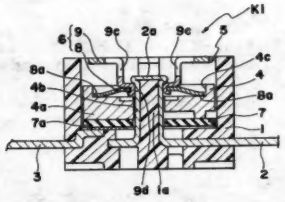
1. A sensor for determining pressures of contact between the surface of said sensor and the surface of an object to be acted on, or from which action is to be received; wherein said sensor is comprised of regions of capacitance, whose capacitance varies according to force applied to the contact surface of said region; where capacitance of said region is estabilished, at least in part, by the separation of conducting surfaces; wherein said seperation is maintained by compression cells, and wherein said compression cells contain only gas and provide means wherein capacitance of said regions varies linearly with external force applied to said region within the mechanical limits of said cell, and wherein said capacitance is measured by external means.

4,584,626

ELECTRONIC COMPONENT HAVING ROTARY MECHANISM

Yukihiro Azuchi, Sabae, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 2, 1985, Ser. No. 688,182
Claims priority, application Japan, Jan. 9, 1984, 59-2350
Int. Cl.[4] H01G 5/06
U.S. Cl. 361—293 **8 Claims**



1. An electronic component having a rotary mechanism provided with a rotor made of metal, including a stator member such that said rotary mechanism is mounted on said stator member, said electronic component comprising:

a combination component for rotating said rotor, which includes a spring member and a plate member such that said spring member and said plate member are coaxially secured to each other by crimping;

said spring member being formed by an elastic metal plate and being formed with at least one engageable piece;

said plate member being substantially formed into a shape of a flanged cap so as to have a side wall and a flange portion

and being formed with a slot extending from said side wall to said flange portion;

said rotor being formed with at least one recess engageable with said engageable piece;

said combination component being rotatably mounted, in an elastically deformed state, on said stator member so as to be rotated together with said rotor through engagement of said engageable piece with said recess.

4,584,627

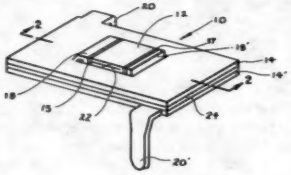
FLAT DECOUPLING CAPACITOR AND METHOD OF MANUFACTURE THEREOF

Donald P. Schilling, Albuquerque, N. Mex.; Raymond C. Jodoin, Scottsdale, and Joseph E. Johnston, Chandler, both of Ariz., assignors to Rogers Corporation, Rogers, Conn.

Filed Jan. 9, 1985, Ser. No. 690,117

Int. Cl.[4] H01G *9/05, 7/00;* **H05K** *5/00*

U.S. Cl. 361—306 **23 Claims**



1. A decoupling capacitor which has a plurality of contact pins extending therefrom in spaced relationship, with at least a first pin and a second spaced pin being power supply pins, the capacitor including:

first conductive plate means having a window therein;

second conductive plate means having a window therein;

insulated spacer means between said first and second plate means;

each of said conductive plate means being provided with connection means extending into the window for connection to a multilayer capacitor, each of said conductive plate means also being provided with contact lead means;

at least one multilayer chip capacitor, said multilayer chip capacitor being positioned in the window defined in said first and second plate means and being bonded to said connection means of said first and second conductive plate means; and

insulating means encapsulating said decoupling capacitor.

4,584,628

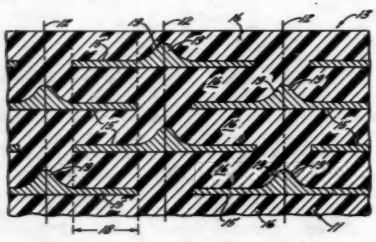
MINIATURE MONOLITHIC ELECTRICAL CAPACITOR

Stanley W. Cichanowski, Bennington, Vt., assignor to SFE Technologies, San Fernando, Calif.

Filed Jun. 27, 1984, Ser. No. 625,335

Int. Cl.[4] H01G *1/14, 7/00*

U.S. Cl. 361—309 **6 Claims**



1. A miniature monolithic capacitor comprising, in combination, a plurality of thin electrode material layers stacked in spaced parallel relationship to define a capacitance region, dielectric material coatings interposed between said layers to hold the layers in said spaced relation, said layers and coatings defining a capacitor block, said layers having edge portions extending from said capacitance region to an edge surface of said block, said edge portions being staggered on said layers so that every other layer has an edge portion extending to one block edge surface while the intermediate layers have edge portions extending to an opposite block edge surface, and said edge portions having substantially increased thickness from the thin layers in the capacitance region to much thicker layers whose edges are exposed in said block edge surfaces for edge termination.

4,584,629

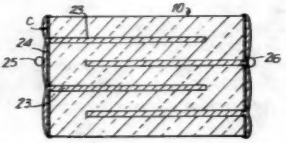
METHOD OF MAKING CERAMIC CAPACITOR AND RESULTING ARTICLE

Ricardo Garcia, and Robert H. Marion, both of Myrtle Beach, S.C., assignors to AVX Corporation, Great Neck, N.Y.

Filed Jul. 23, 1984, Ser. No. 633,414

Int. Cl.[4] H01G *4/10, 7/00*

U.S. Cl. 361—321 **12 Claims**



8. A capacitor comprising a monolithic ceramic body having a plurality of parallel layers of ceramic dielectric material, said body including a plurality of overlapping initially metal free void areas between said layers, alternate said void areas opening to opposite side edges of said body at exit areas, a metallic coating formed on and covering substantially the entirety of said opposite side edges of said body, including the areas immediately surrounding said exit areas, metallic filler material substantially completely filling said void areas and said exit areas, and said exit areas being fully covered by said filler material, said metallic filler material being of a lower melting temperature than the metal of said coating and being selected to wet to the metal of said coating.

4,584,630

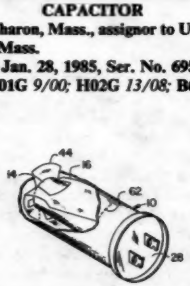
MOUNTING SPACER FOR ELECTROLYTIC CAPACITOR

Steven A. Rubin, Sharon, Mass., assignor to Universal Products, Inc., Brockton, Mass.

Filed Jan. 28, 1985, Ser. No. 695,256

Int. Cl.[4] H01G *9/00;* **H02G** *13/08;* **B65D** *73/02*

U.S. Cl. 361—433 **10 Claims**



1. An electrolytic capacitor comprising:

a metallic casing having an open end;

a capacitance section comprising electrodes and a dielectric; and

a flexible plastic spacer comprising;

a base section,

at least two support arms attached to said base section by hinges, said support arms shaped to hold and laterally support said capacitance section and bear against said metallic casing, and

at least two wedge sections joined to said base sections by said hinges such that said base portion provides a biasing force to hold said wedges in contact with said metallic casing in order to center said spacer and said capacitance section within said casing.

4,584,631

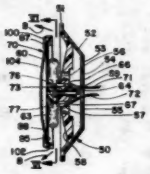
INDIRECT LIGHTING FOR A VEHICLE

Michael J. Cody, Holland, and Ronald A. Dykstra, Rockford, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Oct. 18, 1984, Ser. No. 662,229

Int. Cl.[4] B60Q *3/02*; F21V *7/04*

U.S. Cl. 362—61 **4 Claims**



1. An indirect light for use in a vehicle comprising:

a housing having a concave reflective surface, said housing adapted to be mounted to a vehicle and including means for supplying electrical current to a light source;

a shield removably coupled to said housing;

a light source;

means including at least one socket mounted to said shield for electrically coupling said light source to said supplying means;

electrical connector means coupled to said shield and to said housing for electrically coupling said lamp socket to said means for supplying electrical current;

said light source positioned between said shield and said housing such that illumination from said light source is reflected into the vehicle by said reflective surface of said housing; and

said connector means comprises one of a plug or socket mounted to said shield in alignment with the other of a plug or socket mounted to said housing.

4,584,632

MIRROR OR MIRRORED CABINET

Ulrich Brinkmann, Rothaarweg, Fed. Rep. of Germany, assignor to Metallwarenfabrik Twick & Lehrke KG, Gutersloh, Fed. Rep. of Germany

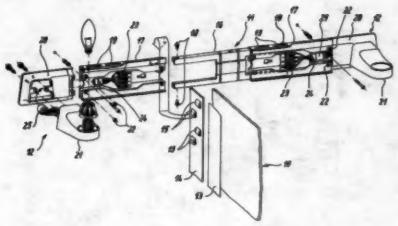
Filed Jul. 27, 1984, Ser. No. 634,950

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 832''166[U]

Int. Cl.[4] H01R *33/00*

U.S. Cl. 362—133 **9 Claims**

1. In a mirror assembly wherein a mirror has at least one lamp mounted at the side, the improvement comprising: an assembly rail securable to a wall and from which the mirror assembly is suspended and comprising three components including an intermediate member and two extremity header members, the intermediate member having one header member connected in a telescoping relation to each of its ends to allow adjustment therebetween, wherein the header members each include a front and back face with the mirror mounted to the front face; and lamp mounting means supporting each lamp and comprising a multiple component assembly including a lamp socket and molding means having one end telescopically received in the outer end of the header members opposite the intermediate member, wherein the molding means further includes a front and back face, and wherein a portion of the



front face fits flush with the header member to which it is attached and wherein the lamp socket extends perpendicularly from an opening in the front face of the molding means to a point in a plane in front of the mirror; and means connecting the lamp mounting means to the assembly rail to enable the release thereof from the front of the assembly rail.

4,584,633

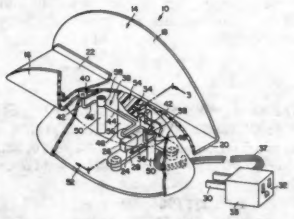
COMBINATION NIGHT LIGHT EYEGLASS HOLDER

Richard A. Comfort, West Haven, Conn., assignor to Lance W. Comfort, Long Beach, Calif.

Filed Sep. 19, 1984, Ser. No. 652,100

Int. Cl.[4] F21V *33/00*

U.S. Cl. 362—253 **11 Claims**



1. An eyeglass holder for bedside use comprising:

eyeglass holder means;

power inlet and power outlet means;

night light means;

normally closed switch means connecting said power inlet to said power outlet, said normally closed switch means opening in response to the placement of a pair of eyeglasses in said holder means to cut off power to said outlet;

normally open switch means connected between said night lamp and said power inlet means, said normally open switch means closing in response to the placement of a pair of eyeglasses in said holder means to supply power to said light lamp thereby to facilitate retrieval of said eyeglasses;

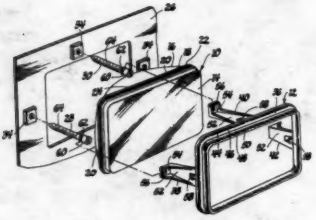
said normally open and said normally closed switch means returning to their normal states upon removal of said eyeglasses from said holder means.

4,584,634

SUPPORT DEVICE FOR A VEHICLE HEADLAMP

Stephen Sigety, Jr., Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1984, Ser. No. 670,496
Int. Cl.[4] F21V 21/28
U.S. Cl. 362—275 3 Claims



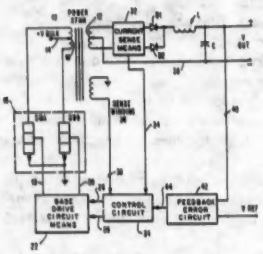
1. A support device attachable to a vehicle body at the front end thereof and adapted to support and provide adjustable aiming movement of a headlamp formed with a radially extending flange surrounding the headlamp adjacent the lens thereof, said flange being defined by an end wall and substantially parallel front and rear walls each of which lies in a plane substantially perpendicular to the optical axis of said headlamp and intersects said end wall, said support device comprising a ring-like retainer member encompassing said flange and having a uniform Z-shaped cross section one leg of which is located adjacent said front wall of said flange and another leg of which is located adjacent said end wall of said flange, a pair of arms connected at one end to said retainer member and located along a first axis passing through the geometric center of said headlamp and being perpendicular to said optical axis, a third arm connected to said retainer member and located along a second axis passing through said geometric center of said headlamp and being perpendicular to both said optical axis and said first axis, each of said arms having said one end thereof formed with a spring clip member which is adapted to contact said rear wall of said flange and cooperate with said retainer member to maintain said flange firmly within said retainer member and an adjusting screw carried by the other end of each of said three arms and adapted to be threadably received by said vehicle for adjusting the aim of said headlamp.

4,584,635

FLUX CENTERING AND POWER CONTROL FOR HIGH FREQUENCY SWITCHING POWER

Alexander G. MacInnis, and William B. Nunnery, both of Cary, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,195
Int. Cl.[4] H02M 3/315
U.S. Cl. 363—25 16 Claims



16. An apparatus for generating a signal representing the magnetizing current (I_m) in the power transformer of a power supply said apparatus comprising:

a sensing means coupled to the secondary winding of the power transformer and operable for sensing a current therein;

first means coupled to the sensing means and operable for generating a periodic voltage; and

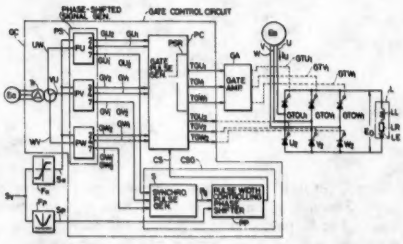
second means for monitoring a voltage on the secondary winding and for periodically switching current flow from the first means through said second means whereby the current flowing through said first means is representative of the magnetizing current (I_m).

4,584,636

AC-TO-DC POWER CONVERTER WITH IMPROVED POWER FACTOR AND OVERVOLTAGE SUPPRESSION

Takeki Ando, Naka; Toshiaki Kurosawa; Hiroaki Kuroha, both of Katsuta, and Yoshio Sakai, Naka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1983, Ser. No. 473,729
Claims priority, application Japan, Mar. 10, 1982, 57-36471
Int. Cl.[4] H02M 7/162
U.S. Cl. 363—54 20 Claims



1. A power converter apparatus comprising an AC power supply, a DC load and controllable switching means connected across said AC power supply and said DC load and provided with a current-breaking function for alternately repeating the mode of rectifying said AC power and supplying power to said DC load and the mode of making the current flowing to said DC load flow back, pulse generating means for generating a gate-on pulse for one of the power supply mode and the flow-back mode and a gate-off pulse for one of the flow-back mode and the power supply mode, said power converter apparatus being futher provided with gate control means response to the gate pulses from said pulse generating means for controlling said controllable switching means so that said power supply current and said flow-back current simultaneously flow at the time of said power supply to flow-back-mode switching.

4,584,637

MULTIPLE STEP-UP RECTIFIER CIRCUIT

Yoshio Takamura, Yokohama, and Akira Nakajima, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 23, 1983, Ser. No. 535,161
Claims priority, application Japan, Sep. 28, 1982, 57-168832; Sep. 28, 1982, 57-168833; Nov. 30, 1982, 57-209613
Int. Cl.[4] H02M 7/10
U.S. Cl. 363—61 2 Claims

1. A multiple step-up rectifier circuit comprising:

two output terminals;

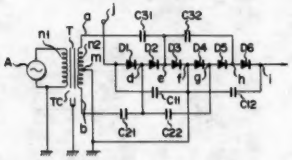
transformer means having a primary winding connected to an AC signal source, and a secondary winding with a tap;

a plurality of rectifying means connected in series, thus forming a series circuit, and being biased in one direction, the ends of said series circuit being connected to said two

output terminals, respectively, said two output terminals being isolated from said center tap;

a plurality of first capacitive means connected in series between the ends of said series circuit of said rectifying means, the connecting points between said first capacitive means being connected to first connecting points between said rectifying means, which are other than those adjacent to the ends of said series circuit of said rectifying means and are not adjacent to one another;

at least one second capacitive means connected between one end of the secondary winding of said transformer means



and a second connecting point between said rectifying means; and

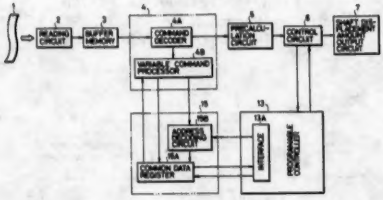
a plurality of third capacitive means connected in series between the other end of the secondary winding of said transformer means and a third connecting point between said rectifying means, the connecting points between said third capacitive means being connected to fourth connecting points, which are not adjacent to one another, and to connecting points other than those adjacent to the third connecting point and said tap being coupled to one of the connecting points of said first capacitive means.

4,584,638

NUMERICAL CONTROL APPARATUS

Kyosuke Akasofu, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1984, Ser. No. 592,501
Claims priority, application Japan, Mar. 25, 1983, 58-50105
Int. Cl.[4] G05B *19/18*
U.S. Cl. 364—136 **9 Claims**



1. A numerical control apparatus comprising:

a reading circuit for reading a work program from a tape on which said work program is stored in an NC language;

a command decoding circuit including a command decoder for decoding work commands in the work program read out by said reading circuit and a variable command processor for processing a variable command in the work command decoded by said command decoder;

a control circuit for outputting a control signal for controlling a machine tool in accordance with the work command decoded by said command decoding portion;

a shaft displacement amount output circuit for outputting a command signal instructing the amount of shaft displacement of said machine tool in response to said control signal from said control circuit;

a programmable controller for performing control other than shaft drive of said machine tool in response to said control signal from said control circuit; and

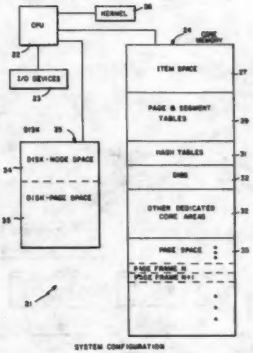
a common data register group for commonly storing data corresponding to variables processed by said variable command processing portion and data written into and read out from said common data register group.

4,584,639

COMPUTER SECURITY SYSTEM

Norman Hardy, Portola Valley, Calif., assignor to Key Logic, Inc., Cupertino, Calif.

Filed Dec. 23, 1983, Ser. No. 565,194
Int. Cl.[4] G06F *1/00*
U.S. Cl. 364—200 **39 Claims**



1. In a capability based data processing system having at least one central processing unit, memory means and a multiplicity of keys, each key providing authority to its holder to use a specified portion of said system's resources, an arrangement comprising:

a plurality of domains for performing predefined processes, each including means for holding a plurality of keys; and

kernel means coupled to said domains for providing said domains with a predefined set of kernel functions, said kernel means having the exclusive means for creating keys and the exclusive means for resolving the authority conveyed by each said key;

wherein

a plurality of said domains comprise factories for creating factory products comprising new domains for performing specified tasks;

a multiplicity of said keys are non-sensory keys, which convey the authority to directly or indirectly cause data to be transmitted to, or changed within, a domain other than the domain invoking said key; and

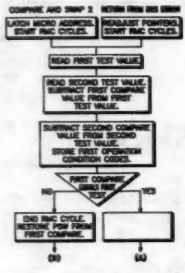
predefined ones of said kernel functions allow a requestor domain with a key to a specified one of said factories to determine whether said specified factory has any non-sensory keys not included in a first predefined set of keys;

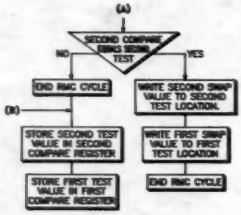
whereby a requestor domain can determine if use of a specified factory could compromise the confidentiality of data provided by said requestor domain to said factory.

4,584,640
METHOD AND APPARATUS FOR A COMPARE AND SWAP INSTRUCTION

Douglas MacGregor; David S. Mothersole, both of Austin, Tex., and John Zolnowsky, Menlo Park, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 27, 1984, Ser. No. 624,864
Int. Cl.[4] G06F 1/00
U.S. Cl. 364—200 6 Claims





1. In a data processor which executes instructions and has a plurality of storage locations, a method for changing a value at a first storage location and a value at a second storage location, the method comprising the steps of:

storing at a third storage location the value at the first location;

storing at a fourth storage location the value at the second location;

storing a selected first swap value at a fifth storage location;

storing a selected second swap value at a sixth storage location; and then

executing an instruction which performs in an uninterruptable sequence the steps of:

comparing the value at the third storage location to the value at the first storage location;

comparing the value at the fourth storage location to the value at the second storage location; and

if both of the values at the third and fourth storage locations are the same as the respective values at the first and second storage locations;

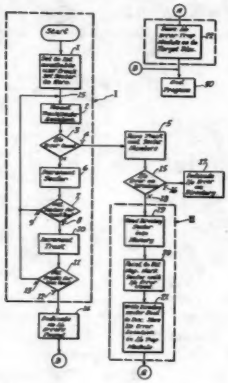
replacing the value at the first storage location with the first swap value; and

replacing the value at the second storage location with the second swap value.

4,584,641
COPYPROTECTING SYSTEM FOR SOFTWARE PROTECTION

Paul Guglielmino, 734 Marble Way, Boca Raton, Fla. 33432

Filed Aug. 29, 1983, Ser. No. 533,132
Int. Cl.[4] G06F 1/00
U.S. Cl. 364—200 20 Claims


Start
Read Program
Read Next Program Instruction
Read Next Data Item
Read Next Data Item
Read Next Data Item
Read Next Data Item
Write Data Item
Write Data Item
Write Data Item
Write Data Item
Read Next Data Item
Read Next Data Item
Read Next

read out from an address of said command memory means which is accessed by said address counter means; and

an address queue for setting data in said address counter means in accordance with a data processing result of said data processing means.

4,584,643

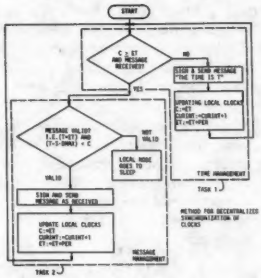
DECENTRALIZED SYNCHRONIZATION OF CLOCKS

Joseph Y. Halpern, Cupertino; Barbara B. Simons, Scotts Valley, and Hovey R. Strong, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 528,282, Aug. 31, 1983. This application Dec. 9, 1983, Ser. No. 560,082

Int. Cl.[4] G06F *1/04*

U.S. Cl. 364—200 **11 Claims**



1. A decentralized method for periodically synchronizing local clocks in a network of counterpart message sending and receiving CPU's, both the drift rate between the clocks and the network message transit and processing times between sending and receiving CPU's being bounded, comprising the steps at each CPU in the network of:

(a) ascertaining whether a time value message has been received at the CPU within a current synchronizing interval;

(b) if said message has not been received within said interval, then originating and broadcasting to all network connected CPU's exactly one time value message, appending thereto its unforgeable signature, resetting the expected time of next resynchronization, and updating its local clock;

(c) ascertaining whether any locally received message is valid according to whether said message was received within a period determined as a function of the number of signatures appending the message; and

(d) if said received message is valid, then appending thereto the unforgeable signature of the CPU to the received message, and passing exactly the one received message on by broadcasting to all network connected CPU's, resetting the expected time of next resynchronization, and updating its local clock; otherwise, returning the CPU to a wait state in the event that the received message is not valid.

4,584,644

METHOD OF CONTROLLING USE OF RESOURCES IN A DATA PROCESSING SYSTEM BY AT LEAST TWO PROCESSES

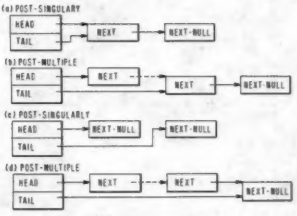
Adrian Larner, Leamington Spa, England, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,655

Claims priority, application European Pat. Off., Mar. 16, 1981, 81301081

Int. Cl.[4] G06F *9/32*

U.S. Cl. 364—200 **3 Claims**



1. In a data processing system including a central processing unit and a main storage capable of executing a plurality of processes concurrently and wherein access to resources is shared by at least two of the processes, and where a first process executing in the central processing unit may be interrupted by a second process, the method of sharing control of the shared resources, comprising the steps of:

storing in main storage, by a first process, control information to be associated with a shared resource indicating that an operation comprised of a sequence of steps is being performed by the first process utilizing the shared resource;

immediately interrupting the execution of the first process in the central processing unit by a second process and initiating execution of the second process in the central processing unit;

determining, by the second process, from the control information associated with the shared resource, whether steps of the operation being performed by the first process on the shared resource remain to be completed;

completing, by the second process, the steps of the operation on the shared resource initiated by the first process before commencing a new operation by the second process with the shared resource.

4,584,645

EMERGENCY OPERATION DEVICE FOR MICROCOMPUTER-CONTROLLED SYSTEMS

Wolfgang Kosak, Möglingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,238

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1982, 3227546; Jun. 20, 1983, 3322074

Int. Cl.[4] F02D *31/00*

U.S. Cl. 364—431.11 **19 Claims**

1. An emergency operation device for a microcomputer-controlled system, in particular for idling charge regulation of an internal combustion engine in motor vehicles, comprising:

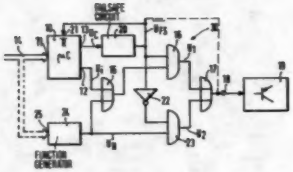
a microcomputer having signal inputs corresponding to operating parameters and further having a signal output for emitting first control signals (U_i) generated by said microcomputer and a failsafe output (U_e) for emitting regular pulses serving as failsafe pulses for continuous monitoring and control of a system output during normal operation of said system,

a circuit means for monitoring occurrence of said regular pulses,

a function generator for providing second control signals,

a logic switching means responsive to said circuit means for supplying an end stage control signal to an end stage of said system, said end stage control signal being selectively chosen from between those of said first control signals and those of said second control signals,

said circuit means being operatively arranged for providing a third control signal (U_{FS}) comprising a failsafe signal for actuating said logic switching means and further providing a reset signal for said microcomputer in the event of a malfunction,



at least one of said first, second and third control signals being selectable to serve as an emergency operation signal (U_N) to trigger said end stage, and

said emergency operation signal derived from said failsafe signal is free of synchronization with any of said operating parameters of said engine.

4,584,646

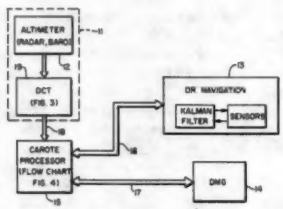
SYSTEM FOR CORRELATION AND RECOGNITION OF TERRAIN ELEVATION

Luen C. Chan, Indian Harbor Beach, and Franklin B. Snyder, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 29, 1983, Ser. No. 509,052

Int. Cl.[4] G06F *15/50*

U.S. Cl. 364—449 **8 Claims**



1. For use with a vehicle guidance system in which geographic position data is supplied from a navigation system, an arrangement for providing said navigation system with error estimates in geographic position data supplied thereby comprising:

first means for generating first signals representative of a discrete cosine transform function based upon the measured elevation of the terrain at the geographic position of the vehicle; and

second means for correlating, in the discrete cosine transform domain, the first signals generated by said first means with a set of second signals representative of respective discrete cosine transform functions based upon data representative of the elevations of a plurality of geographic positions disposed about the geographic position of said vehicle as identified by data supplied from said navigation system, and producing, from said correlation of said first and second signals, third signals representative of the error estimates of position data supplied by said navigation system corresponding to said identified geographic position, a selected one of said third signals being coupled to said navigation system for updating the information processed thereby for the guidance of said vehicle.

4,584,647

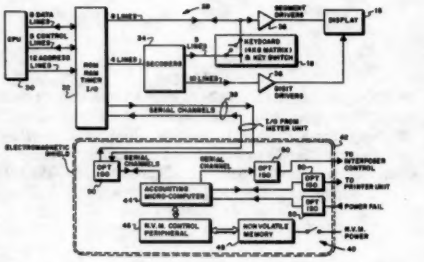
ELECTRONIC POSTAGE METER WITH A RING COUNTER

Alton B. Eckert, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 17, 1983, Ser. No. 542,830

Int. Cl.[4] G06F *15/21, 12/16, 3/02*

U.S. Cl. 364—464 **22 Claims**



1. In an electronic postage meter having at least one volatile register for real time accounting for dispensing of value, means for minimizing the loss of value represented in said volatile register in the event of failure comprising:

(a) a non-volatile memory having a selected plurality of locations; and

(b) computer means for writing into successive locations of said plurality of locations of said non-volatile memory data corresponding to a predetermined increment of value as each successive predetermined increment of value is transferred in said volatile register.

4,584,648

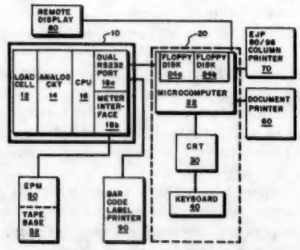
POST OFFICE WINDOW SYSTEM WITH PROGRAMMABLE PROMPTS

Daniel F. Diugos, Huntington, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 14, 1983, Ser. No. 531,974

Int. Cl.[4] G06F *3/02, 15/21;* G07G *1/12*

U.S. Cl. 364—464 **9 Claims**



1. A postage metering system comprising:

(a) a scale, said scale further comprising:

(a.1) a load cell, said load cell providing an analog output proportional to the weight of an item to be mailed;

(a.2) analog circuitry for sensing said analog output and for providing a periodic digital output representative of said analog output;

(a.3) a scale central processing unit (CPU) for receiving said digital output, for processing said output so as to identify the weight of an item to be mailed and for transmitting said output;

(b) a processor operatively connected to said scale, to a keyboard and to a display, in a normal mode of operation said processor computing a postage value for an item to be mailed in response to the weight of said item transmitted from said scale CPU and other postal information input through said keyboard;

(c) a postage meter operatively connected to said processor for imprinting indicia corresponding to said postage value;

(d) said processor further including memory means for storing data, said data including predetermined messages;

(e) said processor selecting and transmitting to said display appropriate ones of said messages to an operator;

(f) in response to a command entered by the operator through said keyboard, said processor entering an editing mode wherein said operator may selectively edit said messages; and,

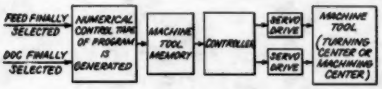
(g) in response to a second command entered through said keyboard by the operator, said processor returning to said normal mode and displaying said edited messages.

4,584,649

METHOD FOR SELECTING AND IMPLEMENTING CUTTING CONDITIONS IN MACHINING A WORKPIECE

Ranga Komanduri, Schenectady, and Charles R. Carder, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 15, 1984, Ser. No. 621,322
Int. Cl.[4] G06F *15/46*; G05B *19/18*
U.S. Cl. 364—475 **14 Claims**



1. The method of selecting and implementing cutting conditions for the machining of a workpiece with a machine tool employing a tool insert, said machine tool having means for adjusting feed of said tool insert and means for adjusting depth of cut of said tool insert, said method comprising the steps of:

(a) calculating the horsepower (HP_c) required at the cutting edge of the tool insert,

(b) calculating a first approximation of the value of the depth of cut (d) to be used,

(c) calculating a first approximation of the value for the feed (f) to be used,

(d) determining the value of the ratio d/f,

(e) comparing the values of f and d/f to the values of preset constraints for f_{min}, f_{max}, $(d/f)_{min}$ and $(d/f)_{max}$,

(f) if f has a value less than f_{min}, assigning the value of f_{min} as the initial value of feed (f_i) and decreasing the value of d as the initial value of depth of cut (d_i) such that $d_i \times f_i = d \times f$,

(1) calculating the value of (d_i/f_i) and

(2) if (d_i/f_i) has a value greater than $(d/f)_{max}$, calculating the value of final feed (f_f) and the value of final depth of cut (d_f) from the relationships

$$f_f = \sqrt{\frac{d_i \times f_i}{L}} \text{ and } d_f = \sqrt{d_i \times f_i \times L},$$

where $L = (d/f)_{max}$,

(g) if f has a value greater than f_{max}, assigning the value of f_{max} as the value of f_i and calculating the value of (d/f_i),

(1) if (d/f_i) has a value smaller than $(d/f)_{min}$, assigning to (d/f_i) the value of $(d/f)_{min}$,

(2) calculating the value of f_f from the relationship:

$$f_f = d/(d/f)_{min} \text{ and}$$

(3) assigning to d_f the value of d in the previous step,

(h) if f has a value equal to or greater than f_{min} and less than or equal to f_{max} and if (d/f) has a value equal to or greater than $(d/f)_{min}$ and equal to or less than $(d/f)_{max}$, then $f_f = f$ and $d_f = d$,

(i) repositioning said means for adjusting the feed of said tool insert with respect to said workpiece to a feed having the value of f_f,

(j) repositioning said means for adjusting the depth of cut of said tool insert with respect to said workpiece to a depth of cut having the value of d_f and

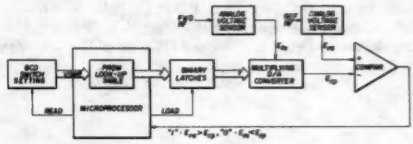
(k) proceeding with the machining operation.

4,584,650

METHOD AND APPARATUS FOR DETERMINING AND DIRECTLY MEASURING THE VOLTAGE STANDING WAVE RATIO OF AN RF TRANSMISSION SYSTEM

Marcel Kozuch, Paramus, N.J., assignor to H. F. Henderson Industries, West Caldwell, N.J.

Filed Nov. 7, 1983, Ser. No. 549,402
Int. Cl.[4] G01R *27/06*; G06J *1/00*
U.S. Cl. 364—481 **8 Claims**



3. An apparatus for determining the magnitude of the VSWR of an RF transmission system, comprising:

means for providing a preselected VSWR;

means including stored data means for providing an output indicative of the ratio of the absolute value of the reflected RF voltage to the absolute value of the forward RF voltage corresponding to said preselected VSWR;

means for measuring the actual value of the instantaneous forward RF voltage of said transmission system;

means for multiplying said ratio by the absolute value of said measured forward RF voltage to derive a product corresponding to a predicted reflected RF voltage;

means for measuring the actual value of the instantaneous actual reflected RF voltage of said transmission system; and

means for comparing said predicted reflected RF voltage with the absolute value of said measured instantaneous actual reflected RF voltage; and

means for displaying the output of said comparing means.

4,584,651

PROCESS CONTROLLER WITH POWER OUTAGE ANALYSIS CAPABILITY

John L. Carey, Jr., Warrington, and Jack Elias, Lansdale, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 31, 1983, Ser. No. 528,311
Int. Cl.[4] G04F *10/00*
U.S. Cl. 364—483 **10 Claims**

1. A process controller comprising:

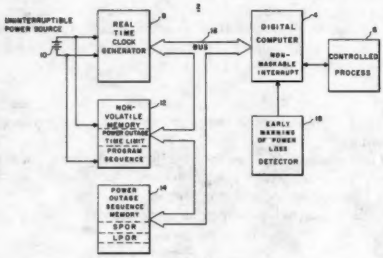
a real time clock means for accumulating a real time duration,

a non-volatile memory means for storing a real time duration limit,

an uninterruptible power source for powering said clock,

imminent power outage detector means for initializing said

clock means in response to the detection of an imminent power outage of electrical power to the controller and a comparison means for comparing after the restoration of power following a power outage the time accumulated by



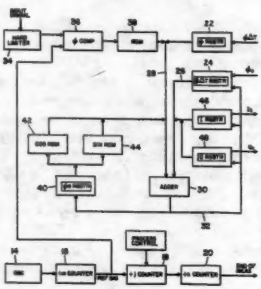
said clock means with the time duration limit stored in said memory to produce a first process control sequence if the accumulated time is less than the time limit and a second process control sequence if the accumulated time is greater than the time limit.

4,584,652

APPARATUS AND METHOD FOR DETERMINING IN-PHASE AND QUADRATURE-PHASE COMPONENTS

Mark A. Sturza, Woodland Hills; Wayne L. Knitter, Chatsworth, and Yi-Zen Wu, Woodland Hills, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 7, 1983, Ser. No. 540,035
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—484 **6 Claims**



1. A digital method for determining the in-phase and quadrature-phase components of a phase error of a detected signal comprising the steps of:

(a) storing estimates of the initial phase and the phase rate of said detected signal; then

(b) sampling said detected signal for a predetermined sampling period; and

(c) updating said initial estimate of phase as said detected signal is sampled; and

(d) determining a phase error for each sample as the difference between said detected signal phase and said updated phase estimate; and

(e) calculating the sine and cosine of said phase error for each sample; and

(f) calculating the in-phase component of said phase error for each sample as the sum of the in-phase component for the previous sample and said sine value; and

(g) calculating the quadrature-phase component of said phase error for each sample as the sum of the quadrature-phase component for the previous sample and said cosine value; and

(h) storing said in-phase and quadrature components of said phase error; then

(i) averaging the stored in-phase components of phase error over said sampling period; and

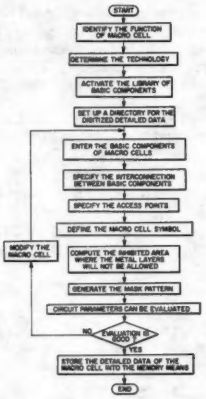
(j) averaging the stored quadrature-phase components of phase error over said sampling period.

4,584,653

METHOD FOR MANUFACTURING A GATE ARRAY INTEGRATED CIRCUIT DEVICE

Samuel Chih, Mountain View, Calif., and Osam Ohba, Inagi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan and Fujitsu Microelectronics Inc., Santa Clara, Calif.

Filed Mar. 22, 1983, Ser. No. 477,751
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—491 **29 Claims**


START
IDENTIFY THE FUNCTION OF MACRO CELL
DETERMINE THE TECHNOLOGY
ACTIVATE THE LIBRARY OF BASIC COMPONENTS
SET UP A DIRECTORY FOR THE DIGITIZED DETAILED DATA
ENTER THE BASIC COMPONENTS OF MACRO CELLS
SPECIFY THE INTERCONNECTION BETWEEN BASIC COMPONENTS
SPECIFY THE ACCESS POINTS
DEFINE THE MACRO CELL SYMBOL
MODIFY THE MACRO CELL
COMPUTE THE PROHIBITED AREA WHERE THE METAL LAYERS WILL NOT BE ALLOWED
GENERATE THE MASK PATTERN
CIRCUIT PARAMETERS CAN BE EVALUATED
NO
EVALUATION IS GOOD ?
YES
STORE THE DETAILED DATA OF THE MACRO CELL INTO THE MEMORY MEANS
END

14. A method for manufacturing a gate array integrated circuit device which comprises a logic system formed on a semiconductor substrate, comprising the steps of:

(a) manufacturing basic cells in an array on the semiconductor substrate, each basic cell comprising a bulk pattern for an active electric element;

(b) storing, in a memory, first symbol data and first detailed data corresponding to macro cells, each of which comprises one or more basic cells and wiring connecting the active electric elements of the basic cell, and each of which has a standard first logic function, the first symbol data identifying each of the macro cells, the first detailed data identifying the connection of the active electric elements of each basic cell and the standard first logic function for each or the macro cells;

(c) storing, in the memory, second symbol data and second detailed data corresponding to expanded macro cells, each of which is an MSI macro cell comprising a plurality of the macro cells, a plurality of terminals for connection outside the expanded macro cell, and wiring connecting the macro cells and the terminals, and each of which has a standard second logic function, the second symbol data including second symbols for identifying the expanded macro cells, the second detailed data identifying the macro cells, the terminals, the connections of the macro cells and the terminals, and the standard second logic function for each of the expanded macro cells;

(d) storing, in the memory, third symbol data and third detailed data corresponding to custom expanded macro cells, each custom expanded macro cell corresponding to a modification of one of the expanded macro cells, and comprising a

plurality of the macro cells, a plurality of terminals for connection outside the custom expanded macro cell, and wiring connecting the macro cells and the terminals, the third symbol data including third symbols for identifying the custom expanded macro cells, the third symbols being modifications of the respective corresponding second symbols, the third detailed data identifying the macro cells included in the custom expanded macro cells, the terminals, and the connections of the macro cells and the terminals, the number of at least one of the macro cells, terminals or wiring for each custom expanded macro cell, being less than that for the corresponding expanded macro cell;

(e) storing, in the memory, logic system data corresponding to the logic system, the logic system data identifying the macro cells, the expanded macro cells and the custom expanded macro cells, and the wiring connecting the macro cells, the expanded macro cells, and the custom expanded macro cells, the logic system data comprising the first, second and third symbol data corresponding to the identified macro cells, expanded macro cells, and custom expanded macro cells, and the connections of the identified macro cells, expanded macro cells, and custom expanded macro cells; and

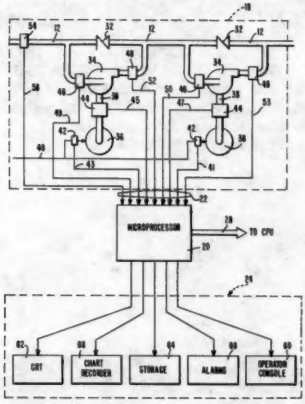
(f) forming a conductive wiring pattern for the semiconductor substrate by synthesizing the logic system data and the first, second and third detailed data.

4,584,654

METHOD AND SYSTEM FOR MONITORING OPERATING EFFICIENCY OF PIPELINE SYSTEM

Harold E. Crane, River Ridge, La., assignor to Ultra Products Systems, Inc., New Orleans, La.

Filed Oct. 21, 1982, Ser. No. 435,648
Int. Cl.[4] G01L *3/26*
U.S. Cl. 364—550 **21 Claims**



1. A method for monitoring the operating status of a materials transport system having a distribution pipeline and a plurality of pumping stations located at spaced intervals along said pipeline for pumping materials through said pipeline, each of said stations comprising a plurality of pumps connected to said pipeline and a plurality of motors having shafts connected respectively to said pumps for operating said pumps, said method comprising:

sensing a plurality of primary input parameters at each of said pumping stations, including substantially simultaneously sensing the shaft speeds of said motors, substantially simultaneously sensing the output torques of said motors, and substantially simultaneously sensing the energy inputs to said motors;

calculating from said primary input parameters a plurality of values including calculating the power produced by each of said motors, and calculating the operating efficiency of each of said motors in terms of power produced and energy input;

comparing the calculated efficiencies of each of said motors of a station with the other motors in the same station to determine which motors are operating more inefficiently than the others; and

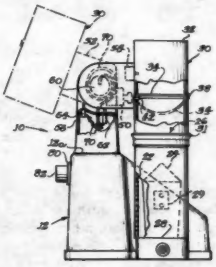
displaying at least the result of said comparison.

4,584,655

MOISTURE TESTER

David B. Funk, Auburn; David M. Beams, Virden, and Dennis E. Grim, Springfield, all of Ill., assignors to Dickey-john Corporation, Auburn, Ill.

Filed Jun. 14, 1983, Ser. No. 504,134
Int. Cl.[4] G01N *25/56*; G01R *27/26*
U.S. Cl. 364—550 **26 Claims**



1. Apparatus for determining the difference in capacitance between any two given settings on a variable capacitor reference element including a fixed member and a movable member which is continuously rotatable relative to the fixed member to define therebetween a continuously variable capacitance, said apparatus comprising:

stepping means coupled with said movable member for incrementally rotating said movable member a predetermined number of steps of equal angular extent per revolution; control means for incrementally energizing said stepping means in a predetermined fashion so as to achieve said incremental rotation thereof; orienting means for defining a predetermined and repeatable base position of said movable member with respect to said fixed member; and counting means for counting the number of said steps of said stepping means during rotation of said movable member between said base position and any other position of said movable member with respect to said fixed member; whereby said difference in capacitance between any two given settings of said variable capacitor is determined as a function of the number of steps counted by said counting means during said rotation between said base position and each of said given settings, respectively.

4,584,656

SIGNAL ACCUMULATING TIME CONTROL METHOD AND APPARATUS FOR A SIGNAL ACCUMULATING TYPE RADIATION SENSING DEVICE

Shinji Sakai; Nobuhiko Shinoda; Takao Kinoshita, all of Tokyo, and Kazuya Hosoe, Kunitachi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,714
Claims priority, application Japan, Aug. 26, 1981, 56-134445
Int. Cl.[4] H04N *3/14*
U.S. Cl. 364—569 **14 Claims**

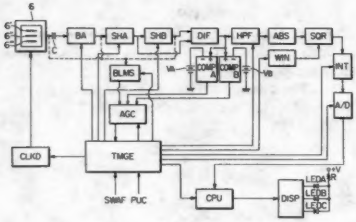
1. A radiation sensing system comprising:

(A) accumulation type radiation sensing means which pro-

duces an electrical indication by accumulating incident radiation over a selected accumulation time;

(B) detecting means for detecting a large change in the intensity of said incident radiation, said detecting means producing a characteristic output when it detects the intensity of the incident radiation; and

(C) control means for controlling the accumulation time of said sensing means, said control means having first and second control modes different from each other and, in



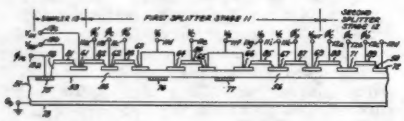
response to the characteristic output of said detecting means, changes an accumulation time control mode from one of said first and second control modes to the other, said control means, when operating in said second control mode, causes successive approximations, at different steps, of the accumulation time of said sensing means until a proper selected acccumulation time, among a plurality of different selected accumulation times, is reached such that the level of the electrical indication produced from said sensing means falls within a predetermined range.

4,584,657

CHARGE TRANSFER MULTIPLIER AND FILTER

Jerome J. Tiemann, and Thomas L. Vogelsong, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1983, Ser. No. 548,067
Int. Cl.[4] G06J 1/00
U.S. Cl. 364—602 **7 Claims**



4. In combination,

a substrate of semiconductor material of one conductivity type;

means for forming a first charge storage region of generally elongated outline in said substrate including a first storage electrode of generally elongated outline insulatingly overlying said storage region,

means for forming second charge storage region of generally elongated outline in said substrate including a second storage electrode of generally elongated outline insulatingly overlying said second storage region,

means for forming a barrier region of generally elongated outline in said substrate including a barrier electrode of generally elongated outline insulatingly overlying said barrier region, one long side of said barrier region being contiguous to a long side of said first storage region, the other long side of said barrier region being contiguous to a long side of said second storage region,

the dimensions of said first stoage region and said second storage region being preset whereby when the potential of said barrier region is of one value which permits the flow of charge therethrough, charge in said first storage region flows into said second storage region and equilibrates with the charge in said first storage region and when the potential of said barrier region is of another value which blocks the flow of charge therethrough the total charge is split into two predetermined parts, one part contained in said first storage region and the other part contained in said second storage region,

means for forming a first accumulator region of generally elongated outline in said substrate including a first accumulator electrode of generally elongated outline insulatingly overlying said first accumulator region,

means for forming a second accumulator region of generally elongated outline in said substrate including a second accumulator electrode of generally elongated outline insulatingly overlying said second accumulator region,

means for forming a first transfer region of generally elongated outline in said substrate including a first transfer electrode of generally elongated outline overlying said first transfer region, said first transfer region having a width equal to substantially one-half of the width of said second storage region, one side of said first transfer region being contiguous with the other side of said second storage region, the other side of said first transfer region being contiguous with one side of said first accumulator region,

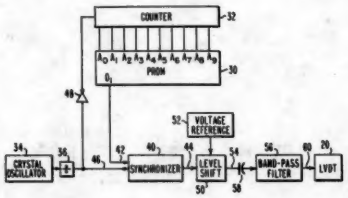
means for forming a second transfer region of generally elongated outline in said substrate including a second transfer electrode of generally elongated outline overlying said second transfer region, said second transfer region having a width equal to substantially one-half of the width of said second storage region, one side of said second transfer region being contiguous with the other side of said second storage region, the other side of said second transfer region being contiguous with one side of said second accumulator region.

4,584,658

STABLE SINE WAVE GENERATOR

Louis G. Ottobre; András I. Szabó , both of Murrysville, Pa., and Wu-Shi Shung, South Windsor, Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 14, 1983, Ser. No. 504,118
Int. Cl.[4] G06F 1/02
U.S. Cl. 364—721 **13 Claims**



1. A stable sine wave generator comprising:

(A) a source of stable clocking pulses;

(B) counter means responsive to said clocking pulses to provide an output indicative of pulses counted;

(C) memory means having a plurality of storage locations for storing a predetermined pattern of binary digits;

(D) said memory means being connected to said counter means to output the binary digit contents of successive storage locations in response to the incrementing of said counter means by said clocking pulses;

(E) means responsive to said clocking pulses for sampling the binary digits read out of said memory means and including

(a) a synchronizer having at least first and second input lines and an output line,

(b) said first input line being connected to receive the binary digit output of said memory means,
(c) said second input line being connected to receive said clocking pulses to transfer the value of the binary digit on said first input line to said output line,
(d) a source of stable voltage reference,
(e) said output line being connected to said source of stable voltage reference to shift the voltage level on said output line, when above a predetermined value, to the value of said voltage reference whereby

the binary digit pattern is converted into a corresponding pulse waveform; and

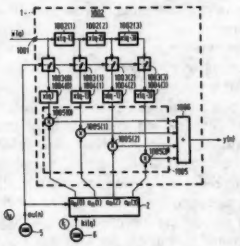
(F) filter means for receiving and filtering said pulse waveform to provide the fundametal frequency sine wave component thereof.

4,584,659

DECIMATION FILTER ARRANGEMENT

Eduard F. Stikvoort, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,810
Claims priority, application Netherlands, Jul. 5, 1982, 8202687
Int. Cl.[4] G06F 7/38
U.S. Cl. 364—724 **5 Claims**



1. A decimation filter for converting a time-discrete input signal having a sampling frequency f_i to a time-discrete output signal having a sampling frequency f_u, such input signal consisting of sequential components x(q), q=. . . −2, −1, 0, 1, 2, . . . , and such output signal consisting of sequential components y(n), n=. . . −2, −1, 0, 1, 2, . . . , the ratio f_u/f_i being irrational; such filter comprising:

(a) means for producing a first sequence of clock pulses ki(q) at said rate f_i;

(b) means for producing a second sequence of clock pulses au(n) at said rate f_u;

(c) filter coefficient genrating means for producing a group of N filter coefficients, N being a predetermined integer, such soefficient generating means comprising:

(c1) deviation component generating means connected to the first and second clock pulse generating means and which, in response to each n^{th} second sequence clock pulse, produces a deviation component d_n of a magnitude proportional to the ratio between the time interval Tad(n) between such n^{th} second sequence clock pulse and the first clock pulse closest thereto; such deviation component generating means comprising:

means for gernating at a sampling rate f_i samples of a periodic signal having a period $1/f_u$ and which linearly varies between two limit values,

selection means connected to said periodic signal sample generating means for selecting those two consecutive periodic signal samples of which one is above and the other is below a predetermined threshold value,

subtracting means connected to said selection means for forming two difference components, the first such difference component being equal to the difference between said first limit value and the magnitude of the first of said selected consecutive periodic signal samples and the second such difference component being equal to the difference between said second limit value and the magnitude of the second of said selected consecutive periodic signal samples,

adding means connected to said subtracting means for deriving the sum of said two difference components,

and dividing means connected to said adding means for producing the deviation component d_n by dividing one of the difference components by the sum of both of said difference components;

(c2) and calculating means connected to said deviation component generating means and responsive to the deviation component d_n produced thereby to produce said group of N filter coefficients in accordance with the relation

$$a_n(m)=h[(d_n+m)V_O]$$

wherein m=0, 1, 2, . . . N−1, a_n(m) is the n^{th} filter coefficient of the group of N filter coefficient to be produced following occurrence of the n^{th} first sequence clock pulse, $h[(d_n+m)V_O]$ is the impulse response h(v) of a FIR-filter, v being a continuous variable, and V_O is a predetermined constant;

(d) a multiplying arrangement coupled to the output of said filter and to said coefficient generator and to which is applied, in response to the n^{th} second sequence clock pulse, N consecutive components x(r−m) of the input signal x(n), r being an integer, and the N filter coefficients a_n(m) produced by the coefficient generator; such multiplying arrangement being adapted to multiply each input signal component x(r−m) by an associated filter coefficient a_n(m);

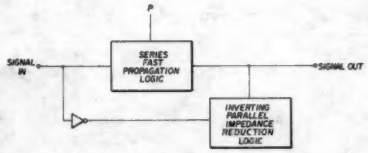
(e) and an adding arrangement coupled to said multiplying arrangement for adding the N products $a_n(m).x(r-m)$ produced thereby, the sum of such N products being the filter output signal component y(n).

4,584,660

REDUCTION OF SERIES PROPAGATION DELAY AND IMPEDANCE

William R. Young, and Michael C. Hoke, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 22, 1983, Ser. No. 506,793
Int. Cl.[4] G06F 7/50
U.S. Cl. 364—786 **15 Claims**



1. A propagation circuit comprising:

an input signal terminal;

an output signal terminal;

a propagate input terminal;

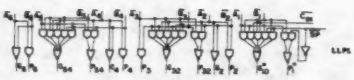
a transmission means connected in series between said input signal and output signal terminals for transmitting an input signal at said input signal terminal to said output signal terminal without delay in response to a propagate signal on said propagate input terminal; and

limiting means connected to said input signal terminal for limiting the series impedance of said propagation circuit subsequent to transmission by said transmission means in response to a low input signal at said input signal terminal.

4,584,661
MULTI-BIT ARITHMETIC LOGIC UNITS HAVING FAST PARALLEL CARRY SYSTEMS

Nathan Grundland, 6, Alkalai Street, Rehovoth, Israel

Continuation of Ser. No. 503,062, Jun. 10, 1983, abandoned, which is a continuation of Ser. No. 256,405, Apr. 22, 1981, abandoned. This application Oct. 11, 1984, Ser. No. 659,512
Claims priority, application Israel, Apr. 23, 1980, 59907
Int. Cl.[4] G06F 7/50
U.S. Cl. 364—787 13 Claims

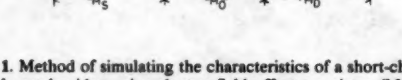


1. An arithmetic-logic-unit (ALU) comprising a plurality of bits arranged according to at least groups and sections including a carry-look-ahead (CLA) system having a plurality of CLA levels, each CLA level including logical preparation (LLP) circuitry in which are produced the intermediate combined signals, the generated carries (G_N) and the propagated carries (P_N) of the respective bit position (A_N, B_N), (P_o, G_o) for the respective group or section position and the logical combination (LLC) circuitry in which are produced the final combined propagated carry signals (C_N) for the first CLA level, or the intermediate combined propagated carry signals (C_P) for the other CLA levels; said LLP circuitry of the first CLA level interconnecting several bit positions so as to output from said first-level LLP circuitry the intermediate combination signals which are a function of a plurality of bit positions, rather than of a single bit position, thus expanding the number of bits per group while drastically reducing extreme fan-out loading expanding the number of groups per section, and maintaining the overflow signal propagation delay in-phase with the entire adder.

4,584,662
METHOD OF SIMULATING A SEMICONDUCTOR MOSFET

Hung C. Lin, 8 Schindler Ct., Silver Spring, Md. 20903

Continuation-in-part of Ser. No. 410,309, Aug. 23, 1982, abandoned. This application Oct. 30, 1984, Ser. No. 666,351
Int. Cl.[4] G06G 7/62, 7/48; G06F 7/00
U.S. Cl. 364—802 11 Claims

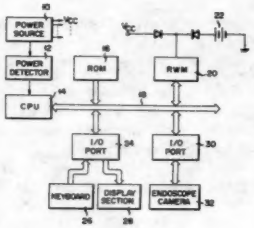


1. Method of simulating the characteristics of a short-channel metal-oxide-semiconductor field effect transistor (MOSFET) having a gate, a source, a drain and a substrate comprising steps of connecting a number of incremental MOSFET's in series, connecting the drain of each said incremental MOSFET to the source of next said incremental MOSFET, the first and last incremental MOSFETs of said series having lower threshold voltages than other incremental MOSFETs, connecting the source of said first incremental MOSFET to a source voltage, connecting the drain of said last incremental MOSFET to a drain voltage, connecting the gates of all said incremental MOSFETs together to form a common gate, connecting a gate voltage to said common gate to a gate voltage to cause current flow from the drain to the source of each said incremental MOSFET when a drain voltage is connected between the drain of said last incremental MOSFET and the source of the said first incremental MOSFET.

4,584,663
APPARATUS FOR POWER-ON DATA INTEGRITY CHECK OF INPUTTED CHARACTERS STORED IN VOLATILE MEMORY

Kowji Tanikawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 295,870, Aug. 25, 1981, abandoned. This application May 29, 1984, Ser. No. 615,704
Claims priority, application Japan, Oct. 3, 1980, 55-138486
Int. Cl.[4] G06F 7/00, 7/20, 11/00
U.S. Cl. 364—900 7 Claims



5. A memory arrangement with a data backup checking function, comprising:

a main power source;

an auxiliary power source;

volatile memory means connected to said main power source and to said auxiliary power source;

input means, connected to said volatile memroy means, for inputting and storing certain data characters into said volatile memory means;

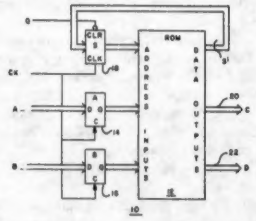
nonvolatile memory means for storing all data characters capable of being input by said input means, up to a given number of said certain characters; and

judging means connected to said main power source, said volatile memory means and to said nonvolatile memory means, for sucessively comparing each data character stored in said volatile memory means with each data character stored in said nonvolatile memory means until a match is found or all the stored data characters have been tested, each time said main power source is placed on, and for emitting a detection signal in the absence of a coincidence between said each data character stored in said volatile memory means and said data characters stored in said nonvolatile memory means.

4,584,664
SORTING APPARATUS

James L. Burrows, Merrimack, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 17, 1983, Ser. No. 542,324
Int. Cl.[4] G06F 7/06
U.S. Cl. 364—900 19 Claims



1. Apparatus for receiving a plurality of input signals repre-

senting input digits from a like plurality of input lines and transmitting signals corresponding to said input digits onto a like plurality of output lines, the particular lines onto which the output signals are transmitted depending on their relative values, said apparatus comprising a memory having a plurality of addressable storage locations, the plurality of input digits together constituting address signals for said memory, each addressable storage location having a like plurality of words each of whose contents are transmitted onto the output lines as the output signals, the contents of said words corresponding to the input digits that address the storage location, the words being arranged in the storage location in order such that, when a storage location is addressed by the input digits, the words are transmitted onto the output lines according to their relative values whereby the input digits are transmitted onto the output lines in sorted order.

4,584,665

ARRANGEMENT FOR PROTECTING AGAINST THE UNAUTHORIZED READING OF PROGRAM WORDS STORED IN A MEMORY

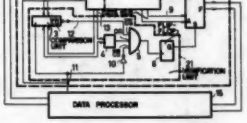
Hendrik Vrielink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1983, Ser. No. 491,512

Claims priority, application Netherlands, May 6, 1982, 8201847

Int. Cl.⁴ G06F *7/04;* G06K *7/00*

U.S. Cl. 364—900 **11 Claims**



1. A device for protection against the unauthorized reading of program words stored in a (14) memory which forms part of a memory unit 20, said protection device comprising:

a data processor unit having an address output which is connected to an address input of said memory in order to address the stored program words during a processing operation in a given sequence which is determined by the data processor unit;

said memory unit (20) comprises a nuisance word source which is separate from the memory (14), and which serves to supply at least one nuisance word which is unrelated to said program words, a verification unit and a selection unit;

said selection unit comprises a control unit, a first data input connected to a first output of the memory and a second data input connected to an output of the nuisance word source;

said memory having a program field comprising the program words and an additional field in which there is stored an additional information for each program word, said additional information being addressed simultaneously with its respective program word;

said additional field being connected to a second output of the memory to which a first input of the verification unit is also connected; a second input of the verification unit being connected to a further connection of the memory;

said verification unit comprises a storage element connected to said first input for storing an indicator derived from the additional information of a first program word when read from the memory;

said stored indicator indicates a program word subsequent to the first program word as determined by said sequence;

said verification unit comprising verifying means for verifying, when a second program word is read from the memory, whether the program information in respect of the read second program word corresponds to the stored indicator;

said verification unit being further provided for generating a first signal when the verification results in correspondence and a second signal when the verification results in non-correspondence;

the selection unit being provided for supplying the read program word from the memory on an output under the control of the first signal received at its control input and to block the supply of the read program word from the memory under the control of a received second signal and to replace this read program on the output by a nuisance word generated by the nuisance word source.

4,584,666

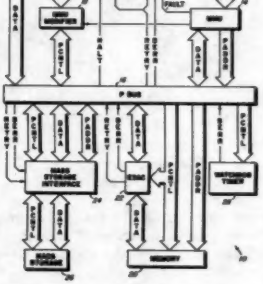
METHOD AND APPARATUS FOR SIGNED AND UNSIGNED BOUNDS CHECK

John Zolnowsky, Menlo Park, Calif.; Edward J. Rupp, and Douglas B. MacGregor, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 21, 1984, Ser. No. 623,043

Int. Cl.⁴ G06F *7/38*

U.S. Cl. 364—900 **5 Claims**



1. In a data processor having means for storing an upper bound and a lower bound, a method for determining if a check value, which may be signed or unsigned, is within the upper and lower bounds, comprising the steps of:

providing a within-bounds signal if any of the following conditions are met:

the lower bound equals the check value; or

the lower bound is less than the check value, and the upper bound is greater than or equal to the check value; or

the lower bound is less than the check value, the upper bound is not greater than or equal to the check value, and the upper bound is less than the lower bound; or

the upper bound is equal to the check value; or

the lower bound is not less than the check value, the upper bound is not less than the check value, and the upper bound is not greater than or equal to the lower bound; and

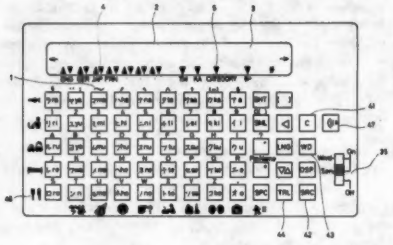
providing an out-of-bounds signal if none of the conditions for providing the within bounds signal are met;

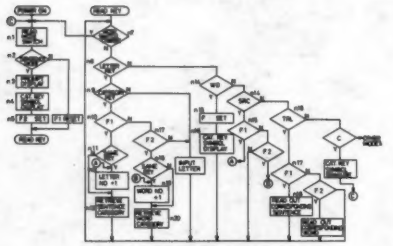
whereby the check value is in bounds if the in-bounds signal is provided and is out of bounds if the out-of-bounds signal is provided.

4,584,667
WORD CATEGORY SELECTION MEANS FOR ELECTRONIC TRANSLATOR

Shintaro Hashimoto, Ikoma; Kunio Yoshida, Nara; Masafumi Morimoto, Yamatokoriyama; Hisao Morinaga, Nara, and Shigenobu Yanagiuchi, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1982, Ser. No. 357,089
Claims priority, application Japan, Mar. 12, 1981, 56-36158
Int. Cl.[4] G06F *15/38*
U.S. Cl. 364—900 7 Claims





1. An electronic translator wherein a first word or words represented in a first language are entered to obtain a second word or words represented in a second language equivalent to the first word or words, comprising:

memory means for storing a plurality of word arrangements in the first language, which work arrangements comprise at least one word and which are grouped within the memory means into a plurality of categories;

selection means for selecting a category from among the plurality of categories, said selection means including a single key switch for each category with a symbol thereon corresponding to that category; and

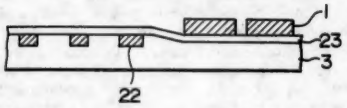
access means responsive to the selection means for addressing the memory means to retrieve and output each of the word arrangements stored in the memory means in the selected category, each of the word arrangements being outputted individually and serially by a single operation of the selection means.

4,584,668
MAGNETIC BUBBLE MEMORY DEVICE

Teruaki Takeuchi, Kokubunji; Ryo Suzuki, Kodaira; Naoki Kodama; Masatoshi Takeshita, both of Hachioji; Tadashi Ikeda, Kanagawa; Toshihiro Sato, Hachioji, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 24, 1984, Ser. No. 603,450
Int. Cl.[4] G11C *19/08*
U.S. Cl. 365—36 11 Claims

1. A magnetic bubble memory device comprising first magnetic bubble propagation tracks formed by implanting ions into a magnetic layer for holding magnetic bubbles therein and second magnetic bubble propagation tracks formed by a soft magnetic material, in which the substantial thickness of the

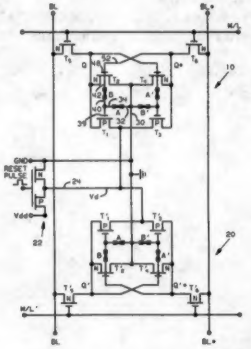


area of the magnetic layer at least where the soft magnetic material is located is smaller than that of the other area.

4,584,669
MEMORY CELL WITH LATENT IMAGE CAPABILITIES

Martin D. Moynihan, Annandale, and Thomas A. Williams, Reston, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,033
Int. Cl.[4] G11C *5/06, 11/40*
U.S. Cl. 365—95 12 Claims



1. Personalizable preconditioned storage circuit formed on an integrated circuit chip, comprising:

a first P channel FET device having its drain/source path connected between a drain voltage and a first node, and having its gate connected through a first severable connection to ground potential and further connected through a second severable connection line to a second node;

a first N channel FET device having its drain/source path connected between said first node and ground potential, and its gate connected to said second node;

a second P channel FET device having its drain/source path connected between said drain voltage and said second node, and having its gate connected through a third severable connection line to ground potential and further connected through a fourth severable connection line to said first node;

a second N FET device having its drain/source path connected between said second node and said ground potential, and having its gate connected to said first node;

said circuit having a first selectable latent image state wherein said first node charges up faster than said second node when said drain voltage turns on if said second and third severable connection lines have been selectively severed providing said first latent image operation for said circuit, said circuit thereafter operating as a read/write memory by selectively applying positive or ground potential to said first or said second node to dynamically store a selected binary state in said circuit; and

said circuit having an alternate, second selectable latent

image state wherein said second node charges up faster than said first node when said drain voltage turns on if said first and fourth severable connection lines have been selectively severed providing said second latent image operation for said circuit thereafter operating as said read/write memory be selectively applying positive or ground potential to said first or said second node to dynamically store a selected binary state in said circuit.

4,584,670
INTEGRATED DYNAMIC WRITE-READ MEMORY

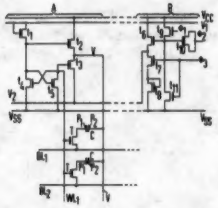
Ewald Michael, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 17, 1983, Ser. No. 458,543

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3202028

Int. Cl.⁴ G11C *7/00, 11/24*

U.S. Cl. 365—149 **12 Claims**



1. Integrated dynamic write-read memory having mutually identical memory cells based on MOS technology and arranged as columns and rows in a matrix, the memory cells, respectively, being formed of a series arrangement of a transfer transistor of the enhancement type and a storage capacitance, the write-read memory further having a plurality of bit lines, each of which is assigned to one of the matrix columns, the transfer transistor of each of the memory cells of a respective matrix column having a channel path with a free terminal connecting the respective memory cell to the bit line assigned to the respective matrix column, and the storage capacitance of each of the memory cells having a free pole connecting the respective memory cell to a common potential of the write-read memory, comprising means for applying a pulsed voltage at the common potential to the free pole of the storage capacitance via a pulsed circuit part of the matrix which, during a read-out of information stored in the individual memory cells, effectively accelerates a discharge of the memory cells resulting from the read-out.

4,584,671
SEMICONDUCTOR MEMORIES

Trevor K. Monk, Bexley, England, assignor to Standard Telephones and Cables Public Limited Company, London, England

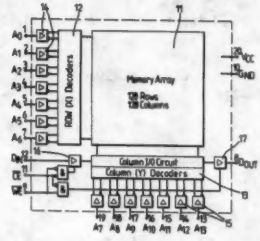
Filed Dec. 2, 1983, Ser. No. 557,459

Claims priority, application United Kingdom, Dec. 3, 1982, 8234637

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—154 **6 Claims**

1. A semiconductor static random access memory, including a plurality of memory cells each having first and second field effect transistors cross-coupled to form a flip-flop circuit, the cells being disposed in a rectangular array or rows and columns on a semiconductor substrate, word lines one for each row of said memory cells, and bit lines one for each column of said memory cells, wherein each memory cell comprises first and second end portions arranged parallel to the array columns, and a central portion arranged at an angle to the end portions so as to provide the cell with a dog leg configuration, wherein the gate of the first transistor is disposed parallel to the central portion of the cell, wherein the gates of the second transistor has a first portion parallel to an end portion of the cell and a second portion parallel to the central portion of the



cell, and wherein the two transistors are so disposed within the cell that a straight route is provided for the word line across the cells of each row of the array.

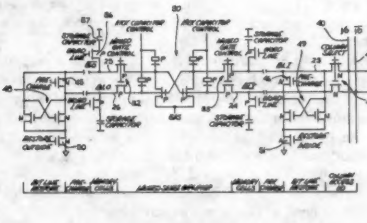
4,584,672
CMOS DYNAMIC RANDOM-ACCESS MEMORY WITH ACTIVE CYCLE ONE HALF POWER SUPPLY POTENTIAL BIT LINE PRECHARGE

Joseph D. Schutz, Portland, and Roger I. Kung, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 22, 1984, Ser. No. 582,526

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—203 **23 Claims**



21. A metal-oxide-semiconductor (MOS) dynamic, random-access memory (DRAM) comprising:

a first pair of bit lines;

a plurality of memory cells coupled to said first pair of bit lines;

a sense amplifier coupled to said first pair of bit lines;

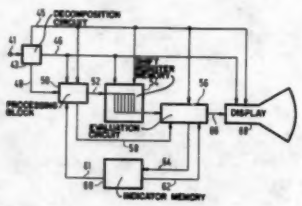
restoration means for selectively restoring potentials on said first pair of bit lines during a read/store cycle, said restoration means coupled to said bit lines, said restoration means applying a potential approximately equal to the power supply potential to one of said lines while coupling the other of said lines to ground potential;

precharge means for precharging said pair of bit lines to a potential approximately equal to one-half said power supply potential, said precharge means coupling said first pair of bit lines together during an active memory cycle, whereby a DRAM consuming less power is achieved.

4,584,673
SERIES/PARALLEL/SERIES SHIFT REGISTER MEMORY SYSTEM

Karel E. Kuijk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,320
Claims priority, application Netherlands, Jun. 11, 1982, 8202364
Int. Cl.[4] G11C *19/08, 19/28*
U.S. Cl. 365—219 8 Claims



1. A series/parallel/series shift register memory system comprising (a) a substrate on which are provided data storage positions configured to form a series input register having a serial data input, a series output register having a serial data output, and a plurality of single storage registers which link data outputs of respective stages of the series input register to data inputs of respective stages of the series output register to thereby form a parallel storage register between the series input and output registers, and (b) a transfer control device for repetitively supplying said registers with a sequence of shift signals, each sequence being such as to shift data presented to said serial data input into the series input register, to shift data present in said respective stages of the series input register in parallel into the parallel storage register, to shift data present at the output of the parallel storage register in parallel into said respective stages of the series output register, and to shift data present in the series output register to said serial data output, characterized in that it includes:

(c) a multi-state sequencer provided with means for changing the state thereof in synchronism with the occurrence of successive said sequences, said sequencer, in each state thereof,

(i) selecting particular data from that which is presented to the serial data input and causing the total data presented to the serial data input to be supplemented with redundant data in such manner that said redundant data will be transferred to the serial data output via a different said single storage register or registers to that or those via which the selected data will be transferred, said redundant data forming an error-detection code in conjunction with the selected data,

(ii) selecting from the data appearing at the serial data output both redundant data which has previously been applied to the serial data input and the particular data in conjunction with which this redundant data forms an error-detection code and determining therefrom whether an error has occurred in respect of the selected data, and

(iii) storing indicator information in an indicator memory in response to a determination or determinations that such an error has occurred, said indicator information indicating via which said single storage register or registers the data which is in error has been transferred, and

(d) means for

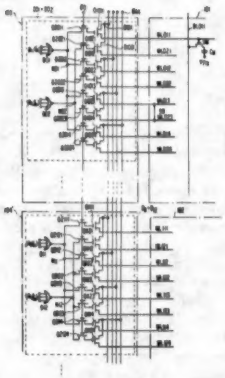
(i) supplementing the data applied to the serial data input with dummy information in response to the presence of such indicator information in the indicator memory so that any single storage register indicated by said indicator information will be supplied only with this dummy information and

(ii) processing the data appearing at said serial data output in accordance with the content of the indicator memory so as to remove therefrom any which has been transferred via a single storage register indicated by said indicator information.

4,584,674
SEMICONDUCTOR MEMORY DEVICE WITH IMPROVED MEMORY ARRANGEMENT

Hiroshi Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,221
Claims priority, application Japan, Nov. 16, 1982, 57-200553
Int. Cl.[4] G11C *8/00*
U.S. Cl. 365—230 13 Claims



1. A semiconductor memory device, comprising:

a plurality of first word lines;

a plurality of second word line, said first word lines and said second word lines being interleaved in parallel;

a plurality of bit lines intersecting with said word lines;

a plurality of memory cells coupled between said word lines and said bit lines;

a first decoding circuit;

a second decoding circuit;

a plurality of control signal terminals;

means for operatively supplying one of said control signal terminals with a selection signal;

a plurality of first driving transistors each coupled between one of said control signal terminals and one of said first word lines;

first means for controlling said first driving transistors in response to an output of said first decoding circuit;

a plurality of second driving transistors each coupled between one of said control signal terminals and one of said second word lines; and

second means for controlling said second driving transistors in response to an output of said second decoding circuit;

wherein every two adjacent word lines are assigned to different decoding circuits.

4,584,675

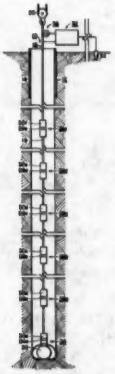
ELECTRICAL MEASURING WHILE DRILLING WITH COMPOSITE ELECTRODES

James M. Peppers, 1026 Plover La., Arlington, Tex. 76015

Continuation-in-part of Ser. No. 269,427, Jun. 1, 1981. This application Jun. 29, 1981, Ser. No. 278,045

Int. Cl.⁴ G01V *1/40, 3/02*

U.S. Cl. 367—81 **16 Claims**



8. A method for transmitting data taken at the bottom of a well bore near the drill bit to the earth's surface through a large volume of the earth formation surrounding the well bore between the drill bit and the earth's surface, the steps comprising:

(a) generating electrical power within the drill pipe responsive to drilling fluids pumped through the drill pipe;

(b) generating sequential bursts of a first AC voltage in digital seuqence representing a digital information signal with use of such electrical power and with the digital being representative of a measured parameter occurring near the drill bit;

(c) passing a first AC signal current impressed by said first AC voltage through a first electrode from said drilling string to be focussed outwardly and radially away from the well bore to form one path of initially horizontal current flow radially out through the drilling fluids and surrounding earth formation with the common path of said first AC current being said drill pipe; and

(d) receiving and detecting a first AC signal potential resulting from said first AC signal current with a receiver/detection means connected to the drill pipe and to a receiver electrode located remote from the drilling string and electrically connected into said earth formation.

4,584,676

METHOD OF AND APPARATUS FOR PIPE LENGTH MEASUREMENT

John W. Newman, Wayne, Pa., assignor to Measurement Systems, Inc., Norristown, Pa.

Filed Mar. 15, 1982, Ser. No. 358,290

Int. Cl.⁴ G01S *15/14*

U.S. Cl. 367—108 **34 Claims**

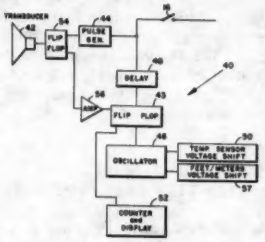
1. A method of measuring the length of an open pipe from a selected end of the pipe including the steps of:

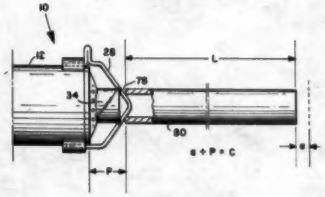
providing sound producing and sound detecting means in spaced open air communication with the interior of the pipe at the selected end,

causing said sound producing means to produce at least a single sound pulse,

causing a count of the cycles of a constant frequency oscillator with the production of such sound pulse,

adjusting the duration of the oscillator count in direct accordance with a valve that, for different pipe diameters over a predetermined range is equal to twice the sum of the distances from the selected end of the pipe to the sound producing and sound detecting means and the other end of the pipe to an adjacent impedance reflective surface,





detecting with the sound detection means the resulting reflected acoustic wave from the impedance reflective surface adjacent the other end of the pipe, and

stopping the oscillator count responsively to such detection.

4,584,677

LOOP BACK CONTROL SYSTEM IN LOOP DATA TRANSMISSION SYSTEM

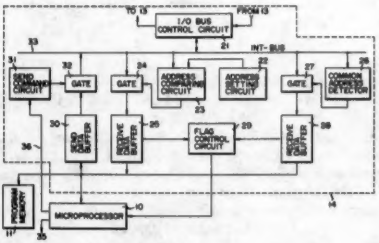
Takashi Kosaka, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 19, 1984, Ser. No. 591,326

Claims priority, application Japan, Mar. 22, 1983, 58-47501

Int. Cl.⁴ H04J *1/16, 3/14, 3/00*

U.S. Cl. 370—15 **3 Claims**



1. A loop back control system in a loop data transmission system which has a master station looped serially with a plurality of remote stations through first and second duplex transmission lines, and which has a loop back function for performing data exchange between terminal devices connected to said remote stations through said first and second duplex transmission lines, comprising:

means for simultaneously sending common loop back command data from said master station to said first and second

duplex transmission lines upon occurrence of a fault, the common loop back command data having a destination address field for setting a common address for said plurality of remote stations, a command field which is set in a loop back mode, a first parameter field for setting a remote station address subjected to loop back switching from said first duplex transmission line to said second duplex transmission line, and a second parameter field for setting a remote station address subjected to loop back switching from said second duplex transmission line to said first duplex transmission line.

4,584,678

CONTENTION-TYPE DATA COMMUNICATION SYSTEM

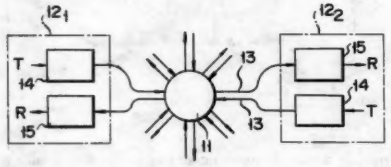
Takeshi Ozeki; Toshifumi Tamura, both of Tokyo, and Mutsumi Fujihara, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 30, 1984, Ser. No. 605,268

Claims priority, application Japan, May 2, 1983, 58-77721

Int. Cl.[4] H04J *3/02*; H04Q *3/00*

U.S. Cl. 370—85 **12 Claims**



1. In a contention-type data communication system wherein a plurality of stations are connected with one another through data bus, each of said stations being arrranged to monitor, through the data bus, a self data signal transmitted over the data bus,

each station includes:

means for transmitting a collision-detecting packet having a predetermined time length T_1 and a predetermined pulse pattern, and a data packet after a time period T_2 from the end of the transmission of the collision-detecting packet; and

means for detecting a communication collision on the data bus in response to pulses received during a time period T_1+T_2 from the start of reception of the collision-detecting packet through the data bus.

4,584,679

TACK-ON ACKNOWLEDGEMENT IN COMPUTER NETWORKS

William D. Livingston, Falls Church, and Eugene E. Jacob, Vienna, both of Va., assignors to E-Systems, Inc., Dallas, Tex.

Continuation of Ser. No. 459,897, Jan. 21, 1983, Pat. No. 4,536,877. This application Jun. 21, 1985, Ser. No. 747,432

The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.

Int. Cl.[4] H04J *3/00, 6/00, /3/02*

U.S. Cl. 370—94 **4 Claims**

1. An apparatus for communicating data, comprising:

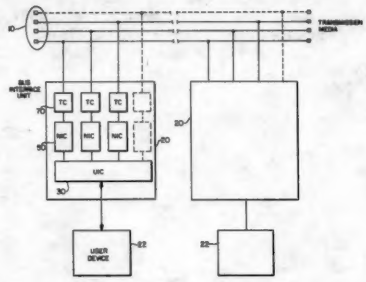
(a) means for transmitting data;

(b) means for receiving and storing without acceptance the transmitted data;

(c) means for evaluating the stored data for validity;

(d) means for acknowledging receipt of the data if evaluated to be valid;

(e) means for transmitting an abort message when no valid acknowledgement is received within a first, predetermined time period; and



(f) means for accepting the stored data if not aborted within a second, predetermined time period.

4,584,680

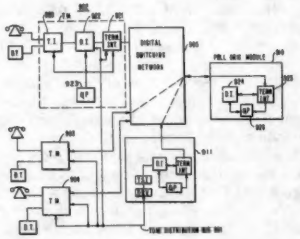
USE OF A TONE BUS TO PROVIDE POLLING AND DATA DISTRIBUTION APPARATUS FOR COMMUNICATION SYSTEM TERMINAL GROUPS

Nicholas J. R. Carter, Shelton; Francisco A. Middleton, Newtown, and Santanu Das, Shelton, all of Conn., assignors to ITT Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 445,625, Nov. 30, 1982, abandoned, and a continuation-in-part of Ser. No. 445,626, Nov. 30, 1982, Pat. No. 4,488,287. This application Mar. 30, 1984, Ser. No. 595,088

Int. Cl.[4] H04J *3/16*; H04Q *11/04*

U.S. Cl. 370—96 **26 Claims**



1. In a combined telecommunications and data communication system for combining and splitting speech and data for transmission through a digital switching network between one or more ports, said system including digital interface means coupled to said ports for combining digitally encoded speech and data words from speech and data buses respectively for delivery to said ports in the same channel for bi-directional transmission between said ports and for splitting speech and data received in the same channel at a port for transmission on speech and data buses, a digital switching network coupled to said digital interface means for switching and transmitting digitally encoded speech and data simultaneously in the same channels between said ports, and a tone bus coupled to said ports for providing data to any port, in combination therewith apparatus for providing a polling mode operation for said system comprising:

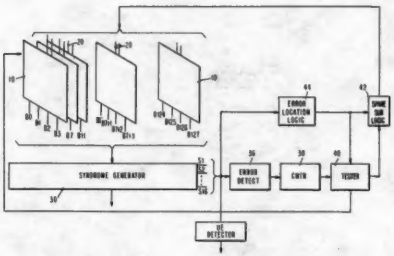
a poll originator module coupled to a given port of said digital switching network and operative to provide at an output a polling signal indicative of a particular service request for each of said ports, said digital switching network being responsive to said polling signal to couple said polling signal

to said tone bus during a broadcast mode whereby said polling signal is transmitted to each of said ports.

4,584,681
MEMORY CORRECTION SCHEME USING SPARE ARRAYS

Shanker Singh, Fishkill, N.Y., and Vijendra P. Singh, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 2, 1983, Ser. No. 528,769
Int. Cl.⁴ G01R *31/28*; G06F *11/10*
U.S. Cl. 371—10 **13 Claims**



1. In a computer system having a memory protected by an error checking arrangement in which data is stored in multi-bit position code words with different bit positions on different arrays, the improvement comprising:

counter means for counting the number of occurrences of correctable errors detected by the error checking arrangement during a time period;

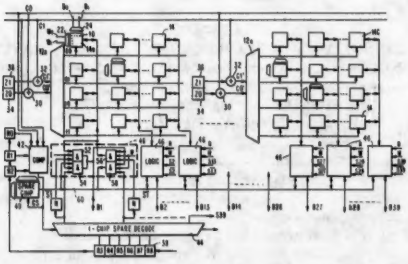
test means for testing the memory for bad arrays only when the count in the counter means exceeds a predetermined number not likely to occur in said time period unless there is an array failure as opposed to the failure of unrelated single bits of the memory; and

spare array substitution means for substituting a spare array for an array in said memory that tests bad by said test means.

4,584,682
RECONFIGURABLE MEMORY USING BOTH ADDRESS PERMUTATION AND SPARE MEMORY ELEMENTS

Siddharth R. Shah, Hopewell Junction; Shanker Singh, Fishkill, both of N.Y., and Vijendra P. Singh, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 2, 1983, Ser. No. 528,718
Int. Cl.⁴ G11C *13/00*
U.S. Cl. 371—10 **2 Claims**



1. In a memory system for n bit code words protected by an error correcting-detecting code system with each of the n bit positions of each of the code words stored in a different set of memory arrays which sets are accessed through more than one but less than n decoders using a common logical array address supplied by the memory system to all of the decoders to select one of the memory arrays from each set, means for eliminating the cause of an uncorrectable error condition detected in a codeword by the error correction code system comprising

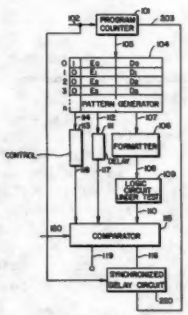
permuting means for changing said common logical array address supplied to at least one of said decoders to a different actual address when said uncorrectable error condition is a result of at least two faulty bits in bit positions accessed through different decoders to disperse at least one of the faulty data bits to another codeword and thereby eliminate the cause of the detected uncorrectable error condition, and

sparing means for substituting a spare memory array for a faulty memory array for eliminating the cause of said uncorrectable error condition when said uncorrectable error condition occurs as a result of at least two faulty bits in bit positions accessed through the same decoder, wherein said sparing means includes logic means for comparing said logical array address supplied to the decoder by the memory system to the actual array address of the faulty data bits and gating means for substituting the spare for the array containing said one of the faulty bits whereby the cause of the uncorrectable error condition can be eliminated whether the arrays containing the faulty data bits are accessed by the same or different decoders.

4,584,683
LOGIC CIRCUIT TEST SYSTEM

Masao Shimizu, Gyoda, Japan, assignor to Takeda Riken Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1983, Ser. No. 554,337
Claims priority, application Japan, Nov. 25, 1982, 57-206507
Int. Cl.⁴ G01R *31/28*
U.S. Cl. 371—25 **9 Claims**



1. A system for testing a logic circuit having an initial state with respect to which test patterns are to be supplied, comprising

a clock for supplying clock pulses,

a pattern generator for storing at a plurality of addresses respective thest pattern data and expected patterns corresponding to respective ones of said test patterns, and for outputting same according to the address thereof that is selectively accessed, said test pattern data including an increment pattern at at least one respective one of said addresses for incrementing the internal state of said logic circuit,

a program counter for providing in synchronism with said clock pulses the addresses of said pattern generator to be accessed for providing the respective test pattern data for testing said logic circuit, wherein said program counter

outputs at least one address of said pattern generator with said increment pattern until a coincidence signal is received corresponding to said logic circuit having been set to said initial state, after which said program counter increments said addresses,

a comparator for comparing each output of said logic circuit corresponding to each said test pattern with the respective expected pattern, and for outputting said coincidence signal corresponding to said initial state of said logic device being detected, and

a synchronized delay circuit for providing said coincidence signal to said program counter with a first delay of at least a predetermined number of said clock pulses,

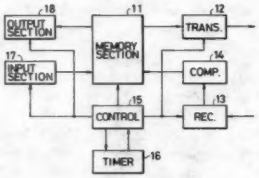
wherein the testing of said logic circuit occurs so that at least the first of said test patterns other than said increment pattern is provided to a respective desired state of said logic circuit.

4,584,684

DATA TRANSMISSION METHOD

Kunihiko Nagasawa, and Isao Nishibori, both of Tokyo, Japan, assignors to Pioneer Electronic Corp., Tokyo, Japan

Filed Nov. 22, 1983, Ser. No. 554,486
Claims priority, application Japan, Nov. 25, 1982, 57-206757
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—33 **4 Claims**



1. A method for operating a data transmission system having a transmitting side and a receiving side, comprising the steps of:

sending a start request signal from said transmitting side to said receiving side;

deciding on said receiving side if text is to then be received;

sending to said transmitting side from said receiving side in response to said start request signal (a) a retransmission request signal if text is then to be received, or (b) a text invalid/standby signal if text is not then to be received;

if said text valid/standby signal is sent from said receiving side to said transmitting side, later deciding on said receiving side when text can be received;

responsive to said later deciding, sending from said receiving side to said transmitting side a retransmission request signal;

sending text from said transmitting side to said receiving side upon said transmitting side receiving said retransmission request signal;

simultaneously upon commencement of the sending of said text at said transmitting side, starting a timer to count a predetermined time period;

halting the sending of said text from said transmitting side to said receiving side if a text invalid/standby signal is received from said receiving side, said timer continuing to count out said predetermined time period irrespective of the receipt at said transmitting side of said text invalid/-standby signal;

sending from said receiving side to said transmitting side a text acknowledgement signal when valid text has been received by said receiving side; and

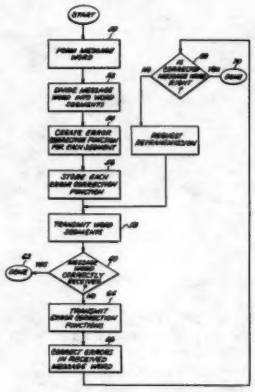
invalidating at said transmitting side text sent from said transmitting side to said receiving side if said time completes counting out said predetermined time period before said text acknowledgement signal is received at said retransmitting side from said receiving side.

4,584,685

METHOD FOR IMPROVING MESSAGE RECEPTION FROM MULTIPLE SOURCES

Jagdish T. Gajjar, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1983, Ser. No. 564,160
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—35 **29 Claims**



1. A method for improving reception of a data word to be sent from an origination station to a destination station, comprising:

concatenating the data word and a security check word to form a message word;

generating an error correction function for the message word;

storing the error correction function for the message word;

transmitting the message word to said destination station;

using the security check word segment of the received message word to determine whether the received data word segment of the received message word has been validly received;

transmitting the error correction function for the message word to said destination station when the received message word has not been verified as valid; and

correcting errors in the received message word using the error correction function received at said destination station to form a corrected message word, wherein said corrected message word comprises a corrected data word and a corrected security check word.

4,584,686

REED-SOLOMON ERROR CORRECTION APPARATUS

Keith R. Fritze, Colorado Springs, Colo., assignor to Optical Storage International, Minneapolis, Minn.

Filed Dec. 22, 1983, Ser. No. 564,273
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—37 **2 Claims**

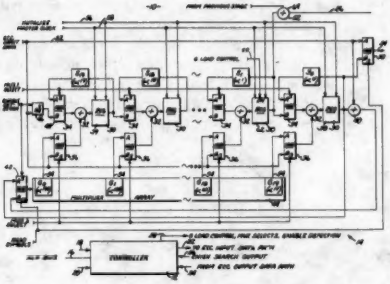
1. A Reed-Solomon calculation apparatus comprising:

a set of 2t registers, where t is the number of errors to be corrected, each register adapted to hold m bits, m being an arbitrary number;

a set of 2t exclusive-OR gates, each gate adapted to, by order, exclusive-or two ordered m-bit sets of inputs and provide a set of ordered outputs, the outputs of the respectively ordered gate connected to the inputs of the correspondingly ordered register;

a set of 2t top multiplexers, each adapted to select between two ordered sets of m-bit inputs and place the selected set on m ordered outputs, a first set of inputs being an A set, a second set of inputs being a B set, the outputs of the respectively ordered multiplexer connected to a first set of ordered inputs of the correspondingly ordered exclusive-OR gate;

a set of 2t bottom multiplexers, each adapted to select between two ordered sets of m-bit inputs and place the selected set on m ordered outputs, a first set of inputs being an A set, a second set of inputs being a B set, the outputs of the respectively ordered multiplexer connected to a second ordered set of inputs of the correspondingly ordered exclusive-OR gate;



a first set of 2t Galois Field multipliers, each adapted to multiply an ordered m-bit input by α^i,

where i corresponds to the order of the multiplier, i=0, 1, 2 . . . 2t−1, and α^i is an m-tuple of Galois Field (2^m), the inputs of the respectively ordered multipliers connected to the outputs of the inversely respectively ordered registers, and the outputs of the respectively ordered multipliers connected to the A input set of the inversely respectively ordered top multiplexers;

a second set of 2t Galois Field multipliers, each respectively ordered multiplier adapted to multiply an ordered m-bit input by the correspondingly ordered coefficient of a generator polynomial G(X) derived from the equation

$$G(X) = \prod_{i=0}^{2t-1} (X - \alpha^i),$$

and the outputs of the respectively ordered multipliers connected to the A input set of the inversely respectively ordered bottom multiplexers;

a feedback multiplexer adapted to select between two ordered sets of m-bit inputs and place the selected set on m ordered outputs, a first set of inputs being an A set, a second set of inputs being a B set, the outputs connected to the inputs of each of said second set of Galois Field multipliers, the outputs of the highest order of said registers connected to the A input set of the feedback multiplexer;

a lead exclusive-OR gate adapted to, by order, exclusive-OR two ordered m-bit sets of inputs and provide a set of ordered outputs, a first set of inputs connected to the outputs of the highest order of said registers, the outputs of the lead exclusive-OR gate connected to the B input set of said feedback multiplexer;

an ECC output data path connected to the outputs of the highest order of said registers;

an ECC input data path comprising m ordered bits connected to a second set of inputs to said lead exclusive-OR gate and to the B input set of each of said lower multiplexers;

an AND gate for logically ANDing an enable detection signal with the m ordered bits of said ECC input data path and providing the ordered resultant to the B input set of the lowest order top multiplexer;

t ordered σ-enable signals, σ_i, i=1, 2, 3 . . . t, connected to the registers connected to the correspondingly ordered first set of Galois Field multipliers;

t−1 ordered Chien exclusive-OR gates, each gate adapted to, by order, exclusive-or two ordered m-bit sets of inputs and provide a set of ordered outputs, a first set of inputs connected to the outputs of the register connected to the correspondingly ordered first Galois Field multiplier, a second set of inputs connected to the outputs of the next higher order Chien exclusive-OR gate, save for the highest order gate, whose second set of inputs is connected to the outputs of the register connected to the next highest order Galois Field multiplier, the outputs from the lowest order gate comprising a Chien search output data path;

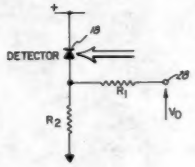
a controller means including means for selectively selecting the A or B input set of each of said multiplexers, for providing said enable detection signal, for selectively providing said σ-enable signals, for providing a signal for clearing each of said registers, and for providing a signal to clock each of said registers.

4,584,687

CALIBRATED FEEDBACK FOR LASER DIODES

P. Guy Howard, Eugene, Oreg., assignor to Optical Storage International-U.S., Minneapolis, Minn.

Filed Dec. 12, 1983, Ser. No. 560,288
Int. Cl.⁴ H01S 3/13
U.S. Cl. 372—29 **1 Claim**



1. A method of calibrating the feedback output from the feedback light detector of the laser diode of an optical disk drive of a laser light pen comprising;

mounting a first and a second resistor in a laser light pen;

connecting said first resistor between the feedback light detector and ground;

connecting said second resistor between the feedback light detector and a feedback output;

operating the laser diode to produce a predetermined light power output;

adjusting the resistance of the first resistor to produce a predetermined voltage at the feedback output; and

adjusting the resistance of the second resistor to produce a predetermined impedance at the feedback output.

4,584,688

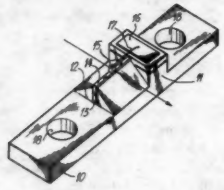
BASE FOR A SEMICONDUCTOR LASER

Loïc Demeuré, Route de Pleumeur; Jean Le Rouzic, Convenant an Dour, St Quay-Perros, and Jean-Claude Simon, 23 rue de Trestrignel, all of 22700-Perros Guirec, France

Filed Aug. 8, 1983, Ser. No. 521,106
Claims priority, application France, Aug. 12, 1982, 82 14042
Int. Cl.⁴ H01S 3/02
U.S. Cl. 372—36 **8 Claims**

1. A base for a semiconductor laser, comprising a monolithic metal support having a base portion, a prismatic part formed on said base portion, and a planar holder formed on said base portion and arranged adjacent said prismatic part, said prismatic part being formed by two planes inclined relative to a plane of symmetry and having a slot in said plane of symmetry,

a metal strip being brazed into said slot, said strip having a polished edge for receiving a laser chip whose length is substantially equal to the thickness of said strip, said planar holder



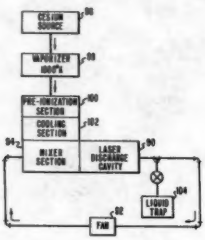
having a parallelepipedic interconnection wafer brazed thereon, which is formed by an insulating substrate covered with a metal coating, said wafer being connectible by means of a connection to said laser chip.

4,584,689

APPARATUS FOR MODIFYING THE LIQUEFICATION OR SOLIDIFICATION POINT OF A GAS

William F. List, Linthicum, and Ronald W. Minarik, Lutherville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 17, 1980, Ser. No. 130,673
Int. Cl.[4] H01S *3/22*
U.S. Cl. 372—55 **4 Claims**



1. In a gas laser system, the improvement comprising:
(A) a gas laser discharge cavity zone operable at a predetermined temperature;
(B) means for introducing a plurality of gases into said zone, at least one of said gases being an active laser gas;
(C) said plurality of gases including a low ionization seedant gas which would normally assume a liquid or solid state when subjected to the temperature of said zone; and
(D) means for selectively ionizing said seedant gas to the exclusion of other gases prior to its introduction into said zone.

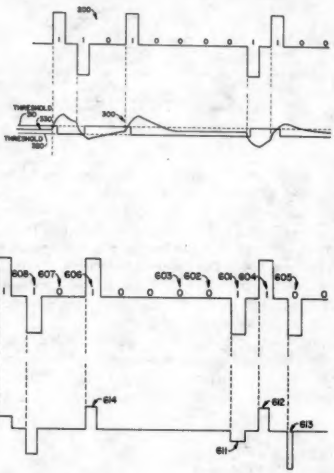
4,584,690

ALTERNATE MARK INVERT (AMI) TRANSCEIVER WITH SWITCHABLE DETECTION AND DIGITAL PRECOMPENSATION

Luca Cafiero, Palo Alto; Mario Mazzola, Campbell, and Massimo Prati, Palo Alto, all of Calif., assignors to D.A.V.I.D. Systems, Inc., Sunnyvale, Calif.

Filed May 7, 1984, Ser. No. 607,998
Int. Cl.[4] H04B *1/62*; H04L *25/34*; H03K *5/08*
U.S. Cl. 375—18 **8 Claims**

1. An apparatus for transmission and reception of digital data over a bandlimited channel comprising:
means for generating and transmitting a pure alternate mark invert pulse code (pure AMIPC) signal from a digital message signal, said pure AMIPC signal being free of bipolar violations; and
means for receiving a signal representative of said pure AMIPC signal, said receiving means including means defining a first threshold and a second threshold, said first threshold for identifying positive polarity pulses of said pure AMIPC signal, and said second threshold for identifying negative polarity pulses of said pure AMIPC signal, said first threshold and said second threshold being substantially equal in amplitude, first detecting means coupled to said threshold defining means for only detecting a signal of an amplitude greater than said first threshold, second detecting means coupled to said threshold defining means for only detecting a signal of an amplitude greater than said second threshold, means for simultaneously enabling said first detecting means and said second detecting means until receipt of a first representative signal of arbitrary polarity, said enabling means also for disabling said first detecting means upon receipt of a representative signal of positive polarity until receipt of a representative signal of negative polarity and for disabling said second detecting means upon receipt of a representative signal of negative polarity until receipt of a representative signal of positive polarity and timing means, for establishing a pulse duration of a reconstructed pulse for each said representative signal of positive polarity and negative polarity, said pulse duration being independent of duration of said representative signal in order to minimize effects of intersymbol interference.

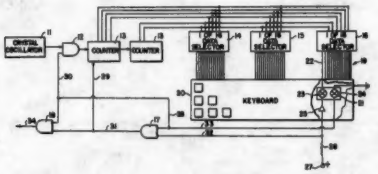


2. An apparatus for transmitting and receiving digital data over a bandlimited channel comprising:
means for generating and transmitting a pure alternate mark invert pulse code signal from a digital message signal, said pure alternate mark invert pulse code signals being free of bipolar violations, said generating and transmitting means including means for specifying discrete values for amplitude and duration of generated pulses of said pure alternate mark invert pulse code signal prior to transmission in response to the sequence of binary digital values of preceding generated pulses, said adjusting means constraining each of said generated pulses to consist of a substantially equal amount of energy, for suppressing the effects of intersymbol interference on a signal received as a representation of a sequence of pulses at a receiving means and for simplifying detection; and
means for receiving and detecting alternate mark invert code pulse signals to recover said digital message.

4,584,691
TIMED PULSE COMMUNICATION SYSTEM

Ernest A. Herr, 1850 Rominger Rd., Winston-Salem, N.C. 27107

Filed Aug. 15, 1983, Ser. No. 523,101
Int. Cl.[4] H03K 7/08
U.S. Cl. 375—22 7 Claims

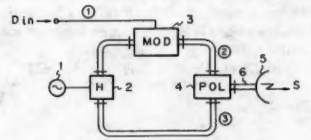


1. A pulse originator for a timed pulse communication system comprising a stable fixed oscillator, oscillator output cycle counting means connecting said oscillator with data selecting means, alphanumeric keyboard controlled means for terminating the cycle count through said data selecting means and for generating a continuous pulse of duration equal to the aggregate duration of said counted cycles, first means for gating the output of said fixed oscillator into said output cycle counting means and second means for gating said output pulse into said pulse originator output, both of said gating means being connected with each key of said keyboard, whereby an output pulse corresponding to a unique number of cycles is selected by depressing any key of said keyboard.

4,584,692
DATA TRANSMITTING-RECEIVING SYSTEM

Hiroyuki Yazuka, Kawasaki, and Isao Nakazawa, Isehara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 5, 1983, Ser. No. 558,340
Claims priority, application Japan, Dec. 7, 1982, 57-214193
Int. Cl.[4] H04K 1/10
U.S. Cl. 375—38 27 Claims



1. A data transmitting-receiving system operatively connected to receive digital input data and first and second carriers, comprising:

a transmitter part, operatively connected to receive the digital input data and the first carrier, for modulating the first carrier with the digital input data to obtain a modulation signal and for transmitting the modulation signal therefrom; and

a receiver part, operatively connected to said transmitter part and operatively connected to receive the second carrier, for receiving the modulation signal and for demodulating the modulation signal with the second carrier, having the same frequency as that of the first carrier, to reproduce, as digital output data, the digital input data,

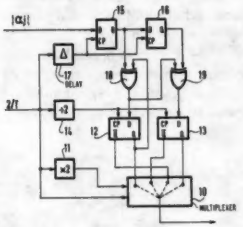
said transmitter part including means for simultaneously transmitting the modulation signal on one of a vertically polarized wave and a horizontally polarized wave and for transmitting the first carrier to said receiver part on the other of the vertically and horizontally polarized waves,

said receiver part including means for simultaneously receiving the modulation signal and the first carrier, and for achieving synchronous detection of the received modulation signal with the received first carrier so as to demodulate the modulation signal, thereby obtaining the digital output data.

4,584,693
QPSK SYSTEM WITH ONE CYCLE PER BAUD PERIOD

Michel Levy, Gometz La Ville, and Serge Surie, L'Hay Les Roses, both of France, assignors to Compagnie Industrielle des Telecommunications CIT-Alcatel, Paris, France

Filed Nov. 23, 1983, Ser. No. 554,668
Claims priority, application France, Nov. 23, 1982, 82 19562
Int. Cl.[4] H04L 27/18
U.S. Cl. 375—54 4 Claims



1. A synchronous QPSK data transmission system of the type having a single carrier cycle per Baud period in which the signal during each Baud period represents two binary bits and can take one of four possible shapes defined by the functions:

$$\pm\text{sign}\,(\sin(2\pi t/T));\ \pm\text{sign}\,(\cos(2\pi t/T)),$$

characterized in that said system comprises:

sampling means for sampling said signal only during the second and third quarters of a Baud period; and

logic means for recognizing the shape of the signal from the sampled value during the third quarter of each Baud period and from the comparison of said sampled value with a sampled value taken during the second quarter of the same Baud period, and for determining the corresponding binary values from the received data.

2. A QPSK synchronous data transmission system of the type having a single carrier cycle per Baud period, wherein the signal in a Baud period encodes two binary bits and can take on any one of four possible shapes defined by the functions:

$$\pm\text{sign}\,(\sin(2\pi t/T));\ \pm\text{sign}\,(\cos(2\pi t/T)),$$

characterized in that said system includes a receiver having a clock recovery circuit, said clock recovery circuit including:

comparison means for comparing two versions of said signal, one delayed with respect to the other by a delay interval equal to half of a Baud period, and producing a first output signal level corresponding to coincidence between said two versions and a second output signal level corresponding to a difference between said two versions;

an oscillator producing a clock signal at four times the Baud frequency and synchronized to signal transitions produced by said comparison means;

a shift register for receiving output data from said comparison means and for serially shifting said data in response to said clock signal, said shift register having parallel outputs separated evenly from one another by four shift register stages; and

a logic gate having multiple inputs connected to said parallel shift register outputs and providing an output signal representing the presence at all of said logic gate inputs of a signal representing said second output signal level from said comparison means.

3. A QPSK synchronous data transmission system of the type including a transmitter for transmitting a signal having a

single carrier cycle per Baud period, wherein the signal in a Baud period encodes pairs of binary bits and can take on any one of four possible shapes defined by the functions:

$$\pm\text{sign}\ (\sin 2\pi t/T);\ \pm\text{sign}\ (\cos 2\pi t/T);$$

characterized in that said system includes a transmitter comprising:

selecting means for receiving a data signal to be transmitted and for providing said data signal as an output in the form of successive pairs of bits;

first precoding means with complementary outputs for differentially encoding one of the bits of each said pair;

second precoding means with complementary outputs for replacing the other bit of each said pair with the modulo-2 product of said other bit with the differentially encoded bit delivered by said first precoding means;

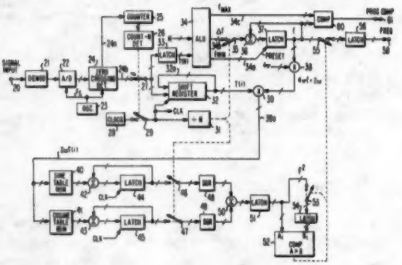
and multiplexer means for generating one of said four possible shapes by scanning the complementary outputs of said first and second precoding means.

4,584,694

METHOD AND APPARATUS FOR ESTIMATING BAUD RATE

Constantine Gumacos, Broomall, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 19, 1984, Ser. No. 632,468
Int. Cl.[4] H04B *3/46, 17/00;* **G06F** *7/38*
U.S. Cl. 375—75 **13 Claims**



1. A method for estimating the baud rate, f, of a digital signal having high-to-low and low-to-high transitions, said method comprising the steps of:

a. detecting the zero-crossings of said high-to-low and low-to-high transitions of said digital signal;

b. measuring the times of occurrence, T(1), T(2), . . . T(N), of the detected zero-crossings of N successive transitions of said digital signal; and

c. determining a value of f for which the expression

$$\left[\sum_{i=1}^{N} \sin 4\pi f T(i)\right]^2 + \left[\sum_{i=1}^{N} \cos 4\pi f T(i)\right]^2$$

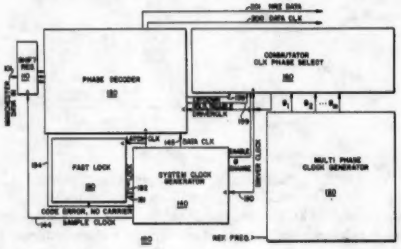
assumes a maximum value.

4,584,695

DIGITAL PLL DECODER

Hee Wong; Ramanatha V. Balakrishnan, both of San Jose, and Herb O. Schneider, Santa Clara, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 9, 1983, Ser. No. 550,526
Int. Cl.[4] H03D *3/18*
U.S. Cl. 375—81 **14 Claims**



1. A digital phase lock loop circuit comprising:

a serial data input line for supplying received data signals;

a driver clock generator having multiple output terminals at which the generator provides clock signals having a predetermined phase relationship to each other;

a driver clock line alternately connectable to any one of the terminals;

input sampling means responsive to signals on said driver clock line to take samples of data bit signals received on said data input line, to detect sample the patterns; and

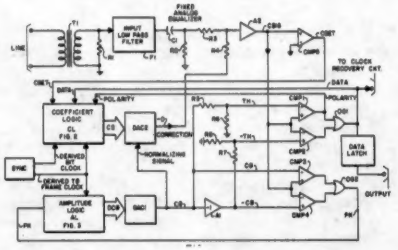
commutator means connected by a respective line to each of the clock generator terminals, and responsive to an UP/-DOWN signal to connect the driver clock line to a determined one of the terminals.

4,584,696

TRANSMISSION RESPONSE MEASUREMENT

Robert H. Beeman, Scottsdale, and Paul U. Lind, Phoenix, both of Ariz., assignors to GTE Communication Systems Corporation, Northlake, Ill.

Filed Oct. 25, 1984, Ser. No. 664,621
Int. Cl.[4] H04B *1/10*
U.S. Cl. 375—99 **20 Claims**



1. An arrangement for the recovery of digital data from an incoming data stream where such data is preceded by a single sync pulse header and comprising:

receiving means for receiving an incoming digital signal and having an output for connection to other circuits, said receiving means including an amplifier operatively connected to a comparison means, to amplify an incoming signal, said comparison means operated to produce a set signal upon detecting any voltage deviation from a set

comparison level, a first, a second and a third register means operated to register each occurrence of said set signal occurring respectively at a first, a second or a third discrete bit time after said sync pulse,

a first connect means operatively connecting said set signal to said registers,

a frame clock pulse source operated to output an enabling signal to said registers to indicate said respective first, second, and third bit times following said sync pulse,

first, second and third gate means respectively, operatively associated with said register means and operative to pass said register contents,

and first, second and third arithmetic means connected in tandem and respectively, operatively connected to receive said respective register content via said respective gate means said third arithmetic means providing a summed digital count,

digital to analog converter means operatively connected to said third arithmetic means to receive said summed digital count and connert said count to an analog level, said analog level inputted to said amplifier to correct said receiving means output.

4,584,697

FOUR-PHASE CHARGE-COUPLED DEVICE HAVING AN OVERSIZED ELECTRODE

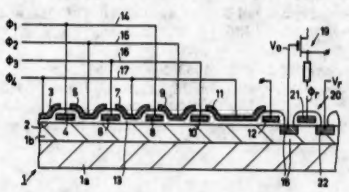
Teunis J. Hazendonk, Sunnyvale, Calif.; Arend J. Klinkhamer, Eindhoven, Netherlands; Gerard A. Beck, Eindhoven, Netherlands, and Theodorus F. Smit, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 385,948, Jun. 7, 1982, abandoned. This application Mar. 19, 1985, Ser. No. 713,582

Claims priority, application Netherlands, Jun. 5, 1981, 8102719

Int. Cl.[4] G11C *19/28*; H01L *29/78*

U.S. Cl. 377—60 **5 Claims**



1. A semiconductor device comprising a four-phase charge-coupled device having a semiconductor body with a major surface, which comprises a reading stage and a row of electrodes adjacent said surface to which clock voltages can be applied for storing and transferring electrical charge packets, which electrodes are arranged in groups of four, the first electrode of each group being connected to a first clock line, the second electrode being connected to a second clock line, the third electrode being connected to a third clock line, and the fourth electrode being connected to a fourth clock line, the last electrode of the row being connected to a separate connection and being provided adjacent said reading stage, means for applying four-phase clock voltages having wave forms such that, during operation, a potential well is induced in the semiconductor body which extends below at least two neighboring electrodes so that the size of the maximum charge packet which can be stored and transported is determined by the area of two adjacent electrodes, the capacitance of said reading stage being sufficiently large to store this maximum charge packet, the penultimate electrode before the reading stage being at least twice the area of each of the electrodes before it and forming with the underlying part of the semiconductor body a capacitance which is also sufficiently high to store said maximum charge packet, said penultimate electrode being connected to one of said clock lines, and means for applying a voltage to said last electrode of the row such that below the last electrode a potential barrier is induced which causes each charge packet which arrives below the penultimate electrode to be stored only below this penultimate electrode during a selected period before being transferred to the reading stage.

4,584,698

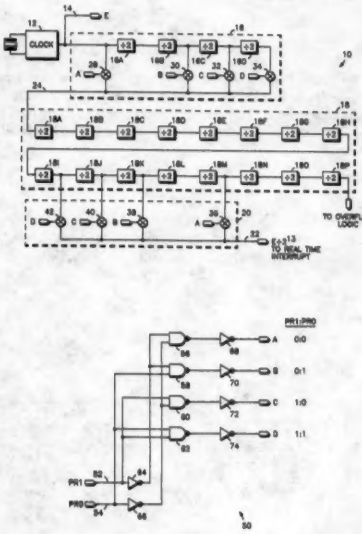
SHARABLE PRESCALED TIMER AND METHOD FOR A DATA PROCESSOR

James M. Sibigtroth, and David Rivera, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 2, 1983, Ser. No. 548,177

Int. Cl.[4] H03K *21/38, 23/66*

U.S. Cl. 377—110 **11 Claims**



1. A programmable timer comprising first and second, variable length counter chains coupled in series between an input and an output, and control means responsive to a control signal for selectively varying the lengths of the first and second chains so that the length of the second chain is inversely related to the length of the first chain, whereby the total length of the first and second chains between the input and the output is constant.

4,584,699

X-RAY ANODE ASSEMBLY

Carlo LaFiandra, New Canaan, and Gregory P. Hughes, Norwalk, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 6, 1984, Ser. No. 568,777

Int. Cl.[4] H01J *35/10, 35/26*

U.S. Cl. 378—130 **9 Claims**

1. In a lithographic system, a rotating anode x-ray source assembly comprising, in combination:

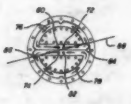
a rotatable anode target ring disposed on a transverse plane with respect to the axis of rotation of said rotating anode;

cooling water flow channel means disposed adjacent said target ring for cooling said target ring during operation;

means for directing an E-beam at a spot on said anode target ring towards the periphery thereof;

means for rotating said target ring and cooling water flow channel means with respect to said E-beam; and

inlet and outlet means for said cooling water flow channel means, said cooling water flow channel means being disposed radially outwardly from said inlet and outlet means; said cooling water flow channel means being constructed



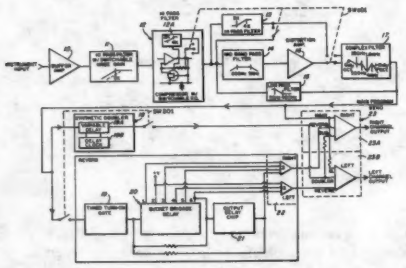
and arranged so that on a transverse plane with respect to the axis of rotation all diametrically opposed points on any diameter have the same cooling water density, thereby dynamically balancing said anode under all thermal conditions.

4,584,700

ELECTRONIC AUDIO SIGNAL PROCESSOR

Donald T. Scholz, 13 Rich Valley Rd., Wayland, Mass. 01778

Filed Sep. 20, 1982, Ser. No. 420,280
Int. Cl.[4] H03G *3/00*
U.S. Cl. 381—61 **21 Claims**



1. An electronic audio signal processor for processing signals in the audio frequency range, comprising:

a mid band pass filter having an input and output and having a bandpass in the middle audio frequency range for receiving an audio input signal;

a distortion amplifier having an input and output and connected to receive the output of said mid bandpass filter for adding harmonic audio signals to said received signal;

a complex filter connected to receive the output of said distortion amplifier, said complex filter having a low audio frequency range, a mid audio frequency range including lower and upper portions thereof, and an upper audio frequency range, said complex filter having a roll-off of increased attenuation with increased frequency in the low audio frequency range, a generally flat response in the mid audio frequency range, but having a dip followed by a peak in the upper frequency portion of said mid audio frequency range, and a roll-off of increased attenuation with increased frequency in the upper audio frequency range.

11. An electronic audio signal processor for processing signals in the audio frequency range, comprising:

a high pass audio filtering circuit for receiving an electrical audio input signal and having an input and output;

an audio signal compressor circuit for receiving the output of said high pass audio filter and for producing an output signal having reduced amplitude variation relative to the variation in the amplitude of the input signal; and

a complex filter connected to receive the output of said distortion amplifier, said complex filter having a low audio frequency range, a mid audio frequency range including lower and upper portions thereof, and an upper audio frequency range, said complex filter having a roll-off of increased attenuation with increased frequency in the low audio frequency range, a generally flat response in the mid audio frequency range, but having a dip followed by a peak in the upper frequency portion of said mid audio frequency range, and a roll-off of increased attenuation with increased frequency in the upper audio frequency range.

16. An electronic audio signal processor for processing signals in the audio frequency range comprising;

an audio signal compressor circuit for receiving an electrical audio input signal for producing an output signal,

a complex filter connected to receive the output of said compressor circuit,

a mid band pass audio filter having an input and output,

manual switch means having multiple positions including a first circuit interconnecting position in which the compressor circuit, the mid band pass audio filter and the complex filter are interconnected in series,

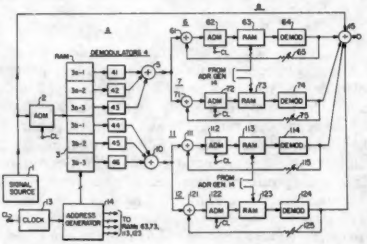
and a high pass equalization circuit, said switch means having a second circuit interconnecting positions in which the equalization circuit is connected with the compressor circuit while maintaining the mid band pass audio filter coupled between the compressor circuit and complex filter.

4,584,701

REVERBERATOR HAVING TAPPED AND RECIRCULATING DELAY LINES

Yasutoshi Nakama, and Koji Watanabe, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 27, 1983, Ser. No. 565,555
Claims priority, application Japan, Dec. 27, 1982, 57-231550
Int. Cl.[4] H03G *3/00*
U.S. Cl. 381—63 **13 Claims**



1. A reverberator comprising:

analog to digital converting means for converting an analog audio source signal into a digital signal;

memory means;

address means for inputting the digital signal into said memory means and reading it therefrom at clock intervals and generating first and second digital signals which are delayed by first and second different values of delay time with respect to the source signal, the ratio of said first value to said second value being a fractional number;

first and second digital to analog converting means for converting the first and second digital signals into first and second analog signals, respectively;

a first recirculating delay line having first delay means for introducing an additional delay time to said first analog signal and a first resistive recirculating path for recirculating the output signal of said first delay means therethrough;

a second recirculating delay line having second delay means for introducing an additional delay time to said second analog signal and a second resistive recirculating path for recirculating the output signal of said second delay means therethrough; and

means for combining said source signal with output signals from said first and second recirculating delay lines.

4,584,702

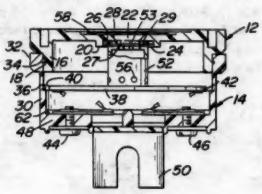
NOISE CANCELLING TELEPHONE TRANSMITTER INSERTABLE IN TELEPHONE HANDSET RECEPTACLE

Wesley F. Walker, Jr., Ringgold, Ga., assignor to Walker Equipment Corporation, Ringgold, Ga.

Filed Dec. 19, 1983, Ser. No. 562,930

Int. Cl.⁴ H04R *19/01*; H04M *1/03*

U.S. Cl. 381—71 **14 Claims**



1. A telephone transmitter insertable in the transmitter receptacle of a telephone handset, comprising:

a cap provided with an opening for passing sound, and an acoustically deformable material secured to the top side of the cap so as to cover the inlet of said opening,

a cup coupled to said cap whereby said cap and cup form an assembly insertable as a unit in the transmitter receptacle of the telephone handset,

a microphone disposed within said unit and having a casing provided with an acoustic entrance facing the underside of said cap adjacent the outlet of said cap opening,

an acoustic damping element disposed outside said microphone casing between said microphone casing and the underside of said cap adjacent the outlet of said cap opening, said acoustic damping element being provided with an opening disposed between the outlet of said cap opening and said microphone acoustic entrance whereby said cap opening and said acoustic damping element opening form a sound channel between said acoustically deformable material and said microphone acoustic entrance.

4,584,703

CHARACTER RECOGNITION SYSTEM AND ITS USE IN AN OPTICAL DOCUMENT READER

Lars O. Hallberg, Lidingo, Sweden, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1982, Ser. No. 450,163

Claims priority, application European Pat. Off., Dec. 23, 1981, 81850252.8

Int. Cl.⁴ G06K *9/38*

U.S. Cl. 382—50 **3 Claims**

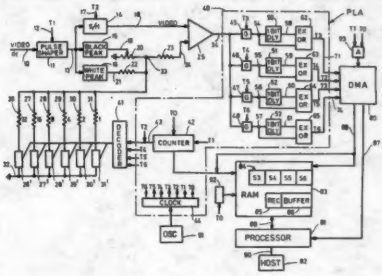
1. A character recognition system for an optical document reader for recognizing two types of characters in a single line of characters, the system comprising:

means for generating and detecting a video signal, said video signal detecting means having a threshold input;

means for generating a threshold signal including signal level controlling circuits for generating a plurality of threshold signals in time multiplex at the threshold input of the video signal detecting means;

means for comparing signals for video signal detection;

means for storing signals including means for generating one time multiplex channel for each threshold signal and having a plurality of logic circuits incorporated in a program logic array (PLA) circuit including a clock circuit and a cycle counter driven by the clock and counting operating cycles during one line scan, the cycle time of one operating cycle covering one time period of each time multiplex channel, said logic circuits operating in time multiplex



mode and having inputs connected to the output of the video signal detector and having outputs connected to a direct memory access (DMA) device storing detected video data in time multiplex into a plurality of storage modules, one module for each threshold signal; and

means for processing signals for recognizing character data using video data detected with a first threshold signal and stored in a first module until a separating character is detected and subsequently recognizing character data using video data detected with a second threshold signal and stored in a second module.

4,584,704

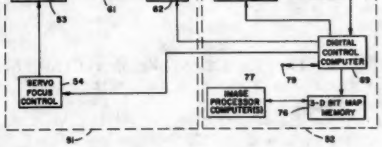
SPATIAL IMAGING SYSTEM

Bran Ferren, 615 Fireplace Rd., East Hampton, N.Y. 11937

Filed Mar. 1, 1984, Ser. No. 585,351

Int. Cl.⁴ G06K *7/10*

U.S. Cl. 382—65 **21 Claims**



1. A fully automatic method of providing spatial imaging information relating to objects in a field of view, comprising:

continually varying the focus of a variable focus lens system to scan said field at a predetermined rate thereby to provide a multiplicity of image planes covering the scanned field, said lens system having a depth of field shallow relative to the field to be scanned, and

detecting in-focus images of said objects as said field is scanned; and

determining the location of each of the in-focus images relative

to the entire field of view as said field is being scanned to provide three-dimensional spatial imaging information.

4,584,705

FLEXIBLE CONTAINER

Elrik Myklebust; Anders Juel, and Odd F. Rasmussen, all of Porsgrunn, Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Aug. 7, 1984, Ser. No. 638,611
Claims priority, application Norway, Sep. 1, 1983, 833138
Int. Cl.[4] B65D *33/06, 33/16*
U.S. Cl. 383—8 **6 Claims**

1. In a flexible container for the filling, transportation and storage of bulk material, said container being of the type including an upper section having at least one lifting loop, side walls and a bottom, with said bottom being formed by a least four flaps which are direct extensions of the material of said side walls, the improvement comprising:

each said flap being defined by rectilinear side edges which extend at an angle to each other and converge at a pointed free flap end;

said flaps being oriented with said free flap ends directed centrally of said bottom, and adjacent said side edges of said flaps being joined to thereby define bottom seams and to form said bottom of a single thickness of said material; and

the sum of said angles defined by said side edges of all of said flaps being less than 360°, such that said container bottom when filled will have a slightly downwardly converging conical or funnel shape.

4,584,706

CHAIN OF LATERALLY INTERCONNECTED BAGS

Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

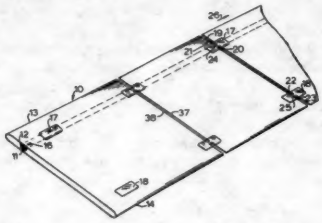
Division of Ser. No. 441,243, Nov. 12, 1982, Pat. No. 4,523,918. This application Jan. 22, 1985, Ser. No. 693,095
Int. Cl.[4] B65D *30/00*
U.S. Cl. 383—37 **14 Claims**

1. A chain of laterally interconnected bags comprising in combination:

a plurality of bags formed of a continuous film each having joined releasably interconnecting rib and groove profiles on their inner surfaces with the profiles of successive bags in alignment;

a connecting link of plastic between each of the bags forming a spot seal interconnecting the layers of the bags and located between adjacent bags; and

means defining a cut of predetermined length partially separating the bags and extending into said spot seal a predetermined distance and controlling the strength of the spot seal for separation of the bags with a predetermined force.

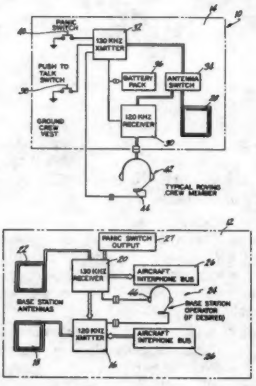


4,584,707

CORDLESS COMMUNICATIONS SYSTEM

Joshua I. Goldberg, Woodbridge; Benjamin G. Lardiere, Jr., Milford; Bruce E. McCoy, Prospect, and John J. Riter, Jr., Meriden, all of Conn., assignors to Dataproducts New England, Inc., Wallingford, Conn.

Filed Jan. 22, 1985, Ser. No. 693,114
Int. Cl.[4] H04B *5/02*
U.S. Cl. 455—41 **9 Claims**



1. A cordless communications system wherein transmission is made and received via magnetic lines of induction comprising:

a base station and at least one mobile station;

said base station having a first magnetic loop antenna and a second magnetic loop antennas are each oriented so as to provide a individual toroidal magnetic fields each of which allows for 360° transmission and reception of magnetic signals in the plane of said first magnetic loop antenna and said second magnetic loop antenna respectively, transmitting means coupled to said first magnetic loop antenna for transmitting a first modulated signal to said at least one mobile station at a first operating frequency, receiving means coupled to said second magnetic loop antenna for receiving and demodulating a second modulated signal from said at least one mobile station at a second operating frequency different from said first operating frequency; and

said at least one mobile station having a mobile magnetic

loop antenna coupled to an antenna switch having first and second operating positions, mobile receiving means coupled to said mobile magnetic loop antenna when said antenna switch is in said first position for receiving said first modulated signal from said base station at said first operating frequency, mobile transmitting means coupled to said mobile magnetic loop antenna when said antenna switch is in said second position for transmitting said second signal to said base station at said second operating frequency and means for switching said antenna switch from said first position to said second position when transmitting.

4,584,708

COMMUNICATION SYSTEM, AND TRANSMITTER THEREFOR, INCLUDING SPECIAL ANNOUNCEMENT RECOGNITION

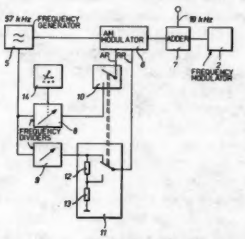
Norbert Eilers, Hildesheim, and Peter Brägas, Itzum, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Continuation of Ser. No. 319,653, Nov. 9, 1981, abandoned. This application Jan. 14, 1985, Ser. No. 690,840

Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121087

Int. Cl.⁴ H04B *1/00*

U.S. Cl. 455—45 **44 Claims**



34. A method of radio broadcasting including:

producing a regular broadcast carrier for broadcasting over a region of reception with an assigned frequency;

modulating said carrier with regular program content;

producing an auxiliary special carrier and modulating the regular broadcast carrier with said auxiliary special carrier;

producing a first recognition signal at a first, predetermined, fixed frequency;

producing a second recognition signal at a second, predetermined, fixed frequency;

modulating the auxiliary carrier with the first recognition signal at a first modulation level to indicate the occasional availability of a special broadcast in the region of reception of broadcasting;

selectively modulating the auxiliary carrier with the second recognition signal to indicate the presence of a special program content of broadcast at that time on the assigned frequency; and

substantially reducing the level of modulation of the auxiliary carrier by the first recognition signal at the time of modulation of the auxiliary carrier by the second recognition signal.

4,584,709

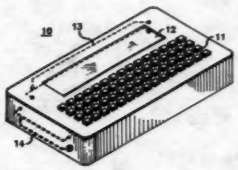
HOMOTROPIC ANTENNA SYSTEM FOR PORTABLE RADIO

Thomas F. Kneisel, Davie; Quirino Balzano, Plantation, both of Fla., and Thomas A. Freeburg, Arlington Heights, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1983, Ser. No. 511,430

Int. Cl.⁴ H04B *1/44, 7/08*

U.S. Cl. 455—78 **13 Claims**



3. An improved homotropic antenna system fo use in a portable receiver having a non-conductive housing which encloses the antenna system comprising:

first and second antenna means for receiving a transmitted R.F. signal, wherein said first and second antenna means are optimized for operation in different electromagnetic environments;

first and second electronic switch means coupled to said first antenna means and said second antenna means respectively for actuating said first of second antenna response to a first of second control signal respectively;

receiver means having an output for receiving an RF signal;

first coupling means coupled to said second electronic switch means and to said receiver means for providing coupling between said second antenna means and said receiver means;

signal strength evaluation means coupled to said receiver means for providing an output signal indicating the quality of the output signal of said receiver means;

a control circuit means coupled to said signal quality evaluator means and to said first and second electronic switch means for alternately selecting the first antenna means or second antenna means if said output signal is in said first state and keeping an antenna activated if said output signal remains in said second state.

4,584,710

COHERENT RECEIVER PHASE AND AMPLITUDE ALIGNMENT CIRCUIT

James P. Hansen, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 13, 1984, Ser. No. 670,082

Int. Cl.⁴ H04B *17/00, 1/16;* G01S *7/40*

U.S. Cl. 455—226 **10 Claims**

1. A circuit for aligning the phase and amplitude of a first and second coherent receiver channels, with said first receiver channel including a first mixer for mixing a first channel signal with a first local oscillator signal, and with said second receiver channel including a second mixer for mixing a second channel signal with a second local oscillator signal which is approximately 90° out of phase with said first local oscillator signal, comprising:

means for applying a sweep signal to each of said receiver channels, with said sweep signal sweeping across a frequency band of interest;

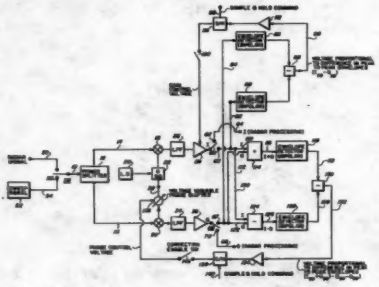
means for comparing the output signals from said mixers and generating a first control signal in accordance therewith;

means for controlling the amplitude level of one of said receiver channels in accordance with said control signal;

means for adding the signals from said mixers to obtain a sum signal;

means for subtracting the signals from said mixers from each other to obtain a difference signal;

means for comparing said sum signal and said difference signal and generating a second control signal in accordance therewith; and



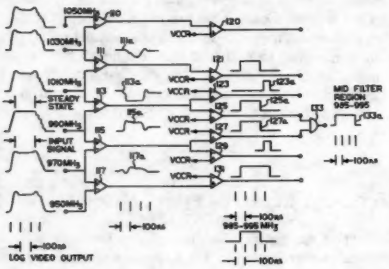
means for controlling the phase of one of the local oscillator signals in accordance with said second control signal to ensure that the local oscillator signals are in phase quadrature.

4,584,711

STEADY STATE CHANNEL SELECT

Robert H. Dunn, 1145 Valley High, Thousand Oaks, Calif. 91362

Filed Jun. 27, 1983, Ser. No. 508,299
Int. Cl.⁴ H04B *17/00*
U.S. Cl. 455—226 **14 Claims**



1. A method for determining the frequency of a narrow band signal received at the input of a wide band receiver having a plurality of N narrow band channels comprising the steps of:

(a) measuring the energy levels produced by said received signals in a plurality of N channels within said wide band;

(b) comparing the said energy levels with guard channels adjacent respective N channels and producing first input signals indicative of N channel to guard channel energy differences;

(c) establishing channel to channel ratio levels (CCR's) in a logic tree indicative of expected energy level differences between said N channels and respective guard channels, when said narrow band signal is in its steady state condition;

(d) comparing said first input signals with said CCR's to produce logic signals identifying said first signals which exceed said CCR's; and

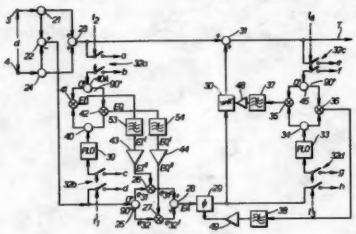
(d) responsive to said logic signals, producing an indication of the frequency of said received narrow band signal.

4,584,712

INTERFERENCE SIGNAL SUPRESSOR SYSTEM

Seiji Isobe, Kawasaki, and Makoto Kaijima, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Nov. 8, 1984, Ser. No. 669,363
Claims priority, application Japan, Dec. 21, 1983, 58-241385
Int. Cl.⁴ H04B *1/10*
U.S. Cl. 455—273 **5 Claims**



1. An interference signal suppressor comprising:

two receiving antennas which are spaced from each other and receive desired signals and interference signals whose frequencies are different from said desired signals;

first adder means in which signals received by said two antennas are added to each other to produce a signal including a first interference component signal;

subtractor means in which signals received by said two antennas are subtracted to produce a second interference component signal;

signal generating means having a mixer circuit for mixing said first interference component signal provided from said first adder means with said second interference component signal provided from said subtractor means to generate a signal having an opppsite phase with respect to that of said first interference component signal provided from said first adder means;

second adder means for eliminating said interference signal provided from said first adder means by adding said opposite phase signal to said signal provided from said first adder means to produce a signal including a residual interference component signal; and

control means having a mixer circuit in which said residual interference component signal provided from said second adder means and said opposite phase signal are mixed to produce feedback control signals for adjusting the phase and amplitude of said opposite phase signal, whereby said residual interference component signal is suppressed by the application of the opposite phase signal to the second adder means.

4,584,713

SIGNAL QUALITY STEERED DIVERSITY

Eugene J. Bruckert, Arlington Heights; James S. Butcher, Glendale Heights, both of Ill., and Thomas F. Kneisel, Davie, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

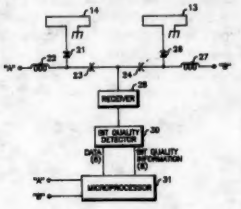
Continuation-in-part of Ser. No. 511,431, Jul. 6, 1983, abandoned. This application Mar. 15, 1985, Ser. No. 712,285
Int. Cl.⁴ H04B *7/08*
U.S. Cl. 455—277 **15 Claims**

9. An antenna control circuit for selecting a particular antenna in an adaptable antenna system, including a presently selected antenna and an alternate antenna, based on the output signal of a receiver configured to receive a modulated data signal comprising:

means for sampling each bit of the received data signal a plurality of times and producing respective noise flag bits indicative of the quality of the data signal receiver using, respectively, the presently selected antenna; and

means for processing the respective noise flag bits for the

presently selected antenna and selecting the alternate antenna if a predetermined number of noise flag bits are detected within a predetermined number of bytes of the received data signal.



4,584,714

AUTOMOTIVE RADIO RECEIVER WITH RADIO FREQUENCY INTERFERENCE ELIMINATION CIRCUIT

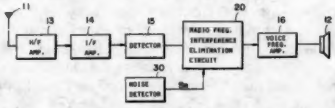
Hiroshige Fukuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 399,688, Jul. 19, 1982, Pat. No. 4,525,870. This application Jun. 18, 1984, Ser. No. 621,931

Claims priority, application Japan, Feb. 2, 1982, 57-12565[U]; Feb. 15, 1982, 57-21300

Int. Cl.⁴ H04B *1/10*

U.S. Cl. 455—297 **24 Claims**



9. A radio frequency interference elimination device in an automotive radio receiver comprising:

a radio circuit for receiving radio broadcasting signal suitable for audio reproduction;

a noise detector for detecting radio frequency interference noise due to automotive electric circuits, said detector being electrically connected to power source wiring to receive radio frequency interference noise therefrom and produce a detector signal when said noise is detected;

a radio frequency interference elimination circuit disposed within said radio circuit and responsive to said detector signal to hold radio broadcasting signal level at an immediate preceeding level for a given period and outputting the held level of radio broadcasting signal for reproduction; and

wherein said noise detector comprises a first delay circuit, a detection device and a second delay circuit connected in sequence, said first delay circuit controls the timing of said second delay circuit so that said noise detector defines a period in which said radio frequency interference elimination circuit holds the radio broadcasting signal level.

4,584,715

IMAGE REJECTION MIXER CIRCUIT ARRANGEMENT

Nicolaas J. Baars, Bieville, France, and Jonathan R. Quartly, Weybridge, England, assignors to U.S. Philips Corporation, New York, N.Y.

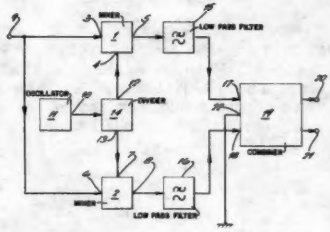
Filed Oct. 9, 1984, Ser. No. 658,956

Claims priority, application United Kingdom, Oct. 14, 1983, 8327650

Int. Cl.⁴ H04B *1/10, 1/26*

U.S. Cl. 455—302 **1 Claim**

1. An image rejection mixer circuit arrangement comprising first and second signal mixers each having first and second inputs and an output, a signal input coupled to the first input of each mixer, a local oscillator producing oscillation signals of a given frequency, means for coupling an output of said local oscillator to the second input of the first mixer, and to the second input of the second mixer, the signal input receiving first and second input signals having respective frequencies which are symmetrically spaced with respect to, and have a specific spacing from, said given frequency, means for producing a relative phase difference of substantially 90° between signals applied in operation to the respective said first inputs or to the respective said second inputs, and signal combining means having inputs coupled to the mixer outputs, said signal combining means combining the output signals of the mixers in such manner as to produce at an output thereof, the said first input signal translated to a lower frequency while suppressing



at said output said second input signal which is also translated to said lower frequency, characterized in that said signal combining means comprises an acoustic surface wave device comprising a piezo-electric substrate for propagating acoustic surface waves at a surface thereof, a first electro-acoustic transducer structure on said surface for launching acoustic surface waves along a propagation path at said surface, and a second electro-acoustic surface wave transducer structure on said surface for receiving acoustic surface waves propagating along said path, said first transducer structure being of a four-phase or pseudo-four-phase unidirectional type having first and second inputs for mutually quadrature-related signals, the outputs of said first and second mixers being coupled to said first and second inputs of said first transducer structure respecitvely.

4,584,716

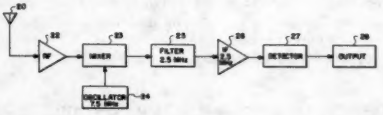
AUTOMATIC DUAL DIVERSITY RECEIVER

Cornell Drentea, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 13, 1984, Ser. No. 670,100

Int. Cl.⁴ H04B *1/26*

U.S. Cl. 455—318 **5 Claims**



1. Apparatus for receiving a first radio signal at a first frequency and a second radio signal at a second frequency contemporaneously, said first and second frequencies being separated by a first frequency difference, said apparatus comprising:

oscillator means having an output means, said oscillator means being adapted to provide an oscillator signal at a frequency equal to one half of the sum of said first and second frequencies at said oscillator output means;

mixer means having radio signal input means, oscillator

signal input means, and output means, said mixer means radio signal input means being adapted to accept said first and second radio signals at said mixer means radio signal input means and said mixer means oscillator signal input means being electrically connected to said oscillator means output means, said mixer means being adapted to mix said first and second radio signals with said oscillator signal to form a mixed signal and to provide said mixed signal at said mixer means output means; and

filter means having an input means and an output means, said filter mean input means being electrically connected to said mixer means output means, said filter means being capable of passing signals having a frequency equal to one half of said first frequency difference and being capable of providing a filtered signal at said filter means output means.

4,584,717

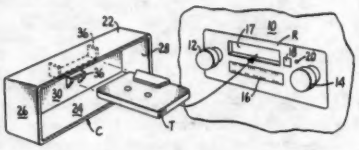
COVER FOR AN AUTOMOBILE RADIO ASSEMBLY

Joe D. Strickland, 1177 Malone Rd., San Jose, Calif. 95125

Continuation of Ser. No. 363,600, Mar. 30, 1982, abandoned. This application Jul. 30, 1984, Ser. No. 634,676

Int. Cl.[4] H04B *1/08*; G11B *1/00*

U.S. Cl. 455—345 **1 Claim**



1. A casing for concealing a dashboard built-in tape deck assembly of an automobile radio,

said casing having top, bottom and end walls and a front wall having an outer face, said walls being of a length, width and depth sufficient to enclose an exterior portion of said tape deck assembly of said automobile radio when said casing is mounted against the dashboard so as to cover said tape deck assembly, and said casing being sufficiently compact to be readily stored in flat fashion when not in use;

said front wall of said casing including an inner face having means thereon comprising a pair of parallel yieldable resilient walls with an open ended slot therebetween which extends a distance sufficient to insure tight engagement with an edge position of a tape cassette when inserted in the slot to releasably frictionally engage the edge portion of the tape cassette between said yieldable walls, another portion of said tape cassette extending outwardly a substantial extent from a back of the top, bottom and end walls such that said cassette can be engaged within the opening into said tape deck assembly to thereby releasably secure said casing against said dashboard to fit over and enclose said tape deck assembly.

4,584,718

WATERPROOF ENCLOSURE FOR PORTABLE RADIO OR TAPE PLAYER

Kip L. Fuller, Denver, Colo., assignor to Product Masters, Inc., Denver, Colo.

Filed Mar. 31, 1983, Ser. No. 482,233

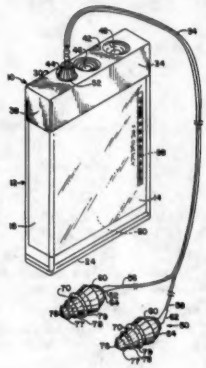
Int. Cl.[4] H04B *1/08*

U.S. Cl. 455—351 **8 Claims**

7. Waterproof earphone apparatus for a portable radio and the like, comprising:

electrically driven speaker means for producing sound in respone to electrical impulses generated by the radio, including water impermeable insulated wire leads connected to said speaker means for conducting electrical impulses to the speaker means, and

a water impermeable boot for covering said speaker means and for mounting said speaker means adjacent a person's ear and directing sound produced by said speaker means into a person's ear, said water impermeable boot including an elongated flexible sleeve, the rear portion of which is positioned around the peripheral surface of said speaker means in such a manner as to seal the connection of said



wire leads to speaker means from water, and the front portion of which encloses a hollow interior chamber extending forward from the periphery of the speaker means in a converging manner to an open distal end in a size and shape for insertion into a person's ear, and including a plurality of annular collars protruding radially outwardly from the external surface of said front portion of said boot means for forming a waterproof seal between said boot means and the person's ear.

4,584,719

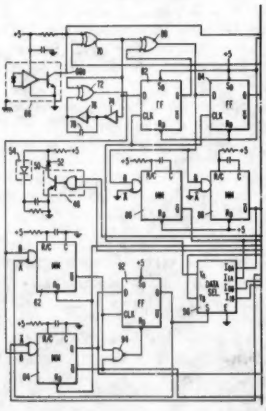
FIBER OPTIC WORKSTATION DATALINK INTERFACE

Bruce J. Miller, Malvern, Pa., assignor to System Development Corp., Camarillo, Calif.

Filed Aug. 24, 1984, Ser. No. 644,066

Int. Cl.[4] H04B *9/00*; G06F *3/00*

U.S. Cl. 455—608 **14 Claims**



1. A fiber optic interface for a cluster arrangement of work-

stations each capable of transmitting and receiving coded data in at least one of a plurality of bit rates comprising:

at least one fiber optic receiving unit disposed in one of said workstations for receiving said coded data at a given one of said bit rates,

data detector means for demodulating said coded data, said detector means including a first exclusive-OR gate, first and second flip-flops, and a first plurality of monostable multivibrators having respective triggered output pulse durations which are predetermined first functions of said plurality of bit rates, said coded data being applied to said first exclusive-OR gate and to said first flip-flop, the output of said first flip-flop also being applied to said exclusive-OR gate, the output of said last mentioned gate being applied to said second flip-flop and in common to said first plurality of monostable multivibrators to trigger the latter,

a second plurality of monostable multivibrators having respective triggered output pulse durations which are predetermined second functions of said plurality of bit rates, first edge detector means for receiving said coded data, the output of said edge detector means being applied in common to said second plurality of monostable multivibrators to trigger the latter upon each transition of said coded data, a third flip-flop coupled to a given one of said second plurality of monostable multivibrators, the state of said third flip-flop being a function of the relative pulse durations of said given one of said monostable multivibrators and that of the pulse interval of said coded data,

data selector means interposed between the respective outputs of said first plurality of monostable multivibrators and said third flip-flop, the output level of the latter flip-flop serving to select one of said first plurality of monostable multivibrators and to steer the output pulse therefrom to both said first and second flip-flops to clock the latter, the outputs of said second flip-flop and the selected one of said first plurality of monostable multivibrators providing respectively demodulated data and bit edge clock pulses.

4,584,720

OPTICAL COMMUNICATION SYSTEM USING PULSE POSITION MODULATION

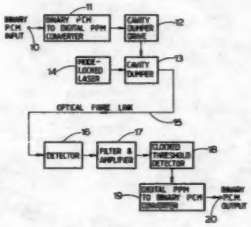
Ian Garrett, Woodbridge, England, assignor to British Telecommunications, London, England

Filed Aug. 30, 1983, Ser. No. 527,813

Claims priority, application United Kingdom, Sep. 2, 1982, 8225007; Nov. 23, 1982, 8233396

Int. Cl.[4] H04B 9/00

U.S. Cl. 455—608 **10 Claims**



3. Transmission apparatus for an optical communication system using digital pulse position modulation in which each transmitted optical pulse is located in one of a plurality of time slots which occur at a predetermined time slot frequency and in which each optical pulse represents a group of digits of input data, said apparatus comprising:

a mode locked laser with a mode locking frequency producing optical pulses at a rate equal to the time slot frequency and synchronized therewith, and

means for selecting and coupling optical pulses from the laser for transmission in dependence upon the value of consecutive groups of digits of the input data such that only one of each N optical pulses is selected and coupled for transmission, N being an integer greater than one.

283,460

LICORICE STRIP OR SIMILAR ARTICLE

Charles Thomassen, Tietjerk; Klaas Kingma, De Tike, and Reinder Huisman, Tietjerk, all of Netherlands, assignors to R. G. Van Slooten's Suikerwerkfabriek B.V., Leeuwarden, Netherlands

Filed Jun. 24, 1983, Ser. No. 507,457

Claims priority, application Benelux, Jan. 27, 1983, 57524-00

Term of patent 14 years

U.S. Cl. D1—121

283,461

NOVELTY CAP

James F. Austin, 910 Donnie Ct., Joliet, Ill. 60435

Filed Dec. 13, 1983, Ser. No. 561,028

Term of patent 14 years

U.S. Cl. D2—248

283,462

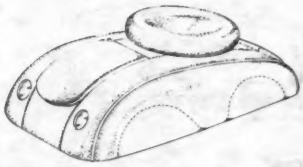
SLIPPER

Kipp Whitman, 9797 Easton Dr., Beverly Hills, Calif. 90210

Filed Dec. 20, 1983, Ser. No. 563,409

Term of patent 14 years

U.S. Cl. D2—279



283,463

HIGH-TOP SHOE

Jacques Chassaing, Neuwiller Les Saverne, France, assignor to ADIDAS Fabrique de Chaussures de Sport, Landersheim, France

Filed Apr. 11, 1984, Ser. No. 599,238

Claims priority, application France, Jan. 13, 1984, NR 840 139

Term of patent 14 years

U.S. Cl. D2—310

283,464

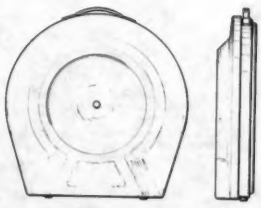
CASE FOR CYMBALS

Marco T. Ogden, R.R. 2, Box 399, Collinsville, Okla. 74021

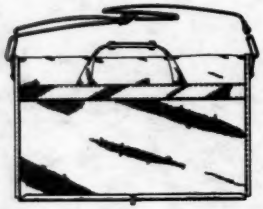
Filed Jun. 2, 1983, Ser. No. 500,298

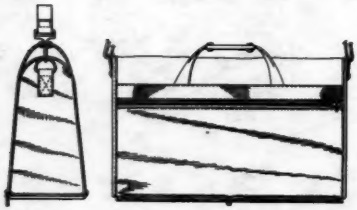
Term of patent 14 years

U.S. Cl. D3—30.1



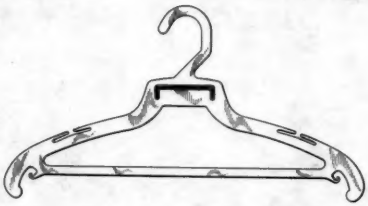
283,465
EXPANDABLE TRAVEL BAG
James H. Allen, Covington, Ky., assignor to 'totes', incorporated, Loveland, Ohio
Division of Ser. No. 486,054, Apr. 18, 1983. This application May 28, 1985, Ser. No. 718,731
Term of patent 14 years
U.S. Cl. D3—71



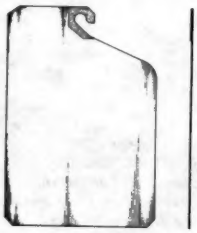


283,466
TIE HANGER
Wolf G. Megow, 23 Ayre Point Rd., Scarborough, Ontario, Canada M1M 1G4
Filed Aug. 21, 1984, Ser. No. 642,827
Claims priority, application Canada, Feb. 27, 1984, 27-02-84-1
Term of patent 14 years
U.S. Cl. D6—317

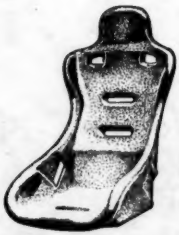
283,467
CLOTHES HANGER
Rudolph B. Fritzhand, 75 Emerson Dr., Great Neck, N.Y. 11023
Filed Jun. 18, 1984, Ser. No. 621,784
Term of patent 14 years
U.S. Cl. D6—319



283,468
CLOTHES SEPARATOR
Wallace F. Steinhilber, P.O. Box 404, 1418 Marcelina, Torrance, Calif. 90508
Filed Jul. 27, 1984, Ser. No. 635,059
Term of patent 14 years
U.S. Cl. D6—328

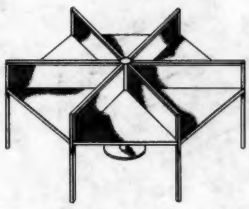


283,469
RACE CAR SEAT
Wade N. Zimmerman, 3009 E. Black Hills Ct., Westlake Village, Calif. 91362
Filed Dec. 20, 1983, Ser. No. 564,077
Term of patent 14 years
U.S. Cl. D6—356

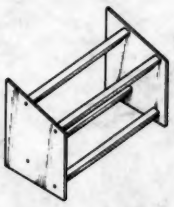


283,470
RACE CAR SEAT
Wade N. Zimmerman, 3009 E. Black Hills Ct., Westlake Village, Calif. 91362
Filed Dec. 21, 1983, Ser. No. 564,473
Term of patent 14 years
U.S. Cl. D6—356

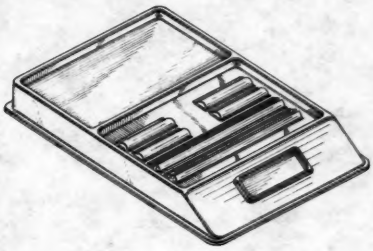
283,471
PARTITIONED DESK UNIT
Devere P. Kent, 5720 S. Jordan Canal Rd., Salt Lake City, Utah 84118
Filed Apr. 21, 1983, Ser. No. 487,127
The portion of the term of this patent subsequent to Sep. 13, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—421



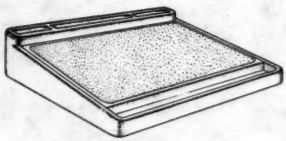
283,472
SHOE RACK
Jervis J. Wattles, 16231 W. Fourteen Mile Rd., Birmingham, Mich. 48009
Filed Mar. 29, 1984, Ser. No. 594,935
Term of patent 14 years
U.S. Cl. D6—463



283,473
COUNTER MERCHANDISER WITH PRICE DISPLAY
William Silver, New York, N.Y., assignor to Thomson Leeds Company Inc., New York, N.Y.
Filed Apr. 25, 1983, Ser. No. 488,251
Term of patent 14 years
U.S. Cl. D6—467

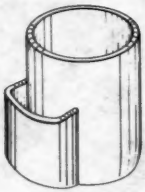


283,474
DESK TOP
Mel Appel, Livingston, N.J., assignor to The Mel Appel Company, Short Hills, N.J.
Filed Oct. 14, 1983, Ser. No. 541,708
Term of patent 14 years
U.S. Cl. D6—511

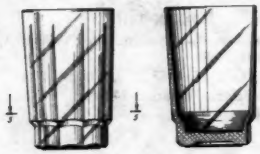


283,475
COMBINED SEAT AND ARMREST COVER UNIT FOR A CHILD'S CAR SEAT
Rebecca Reece, 701 W. Mulberry, Bloomington, Ill. 61701
Filed Oct. 31, 1983, Ser. No. 547,389
Term of patent 14 years
U.S. Cl. D6—611

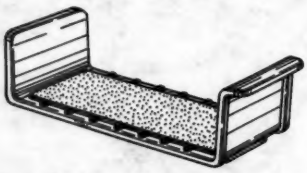
283,476
MUG OR SIMILAR ARTICLE
Richard M. Mansueto, North Dighton, Mass., assignor to Robert J. Doherty, Barrington, R.I.
Filed Apr. 22, 1983, Ser. No. 487,526
Term of patent 14 years
U.S. Cl. D7—9



283,477
TUMBLER OR SIMILAR ARTICLE
Jean-Jacques Durand, Labutte, 62510 Arques, France
Filed Nov. 1, 1983, Ser. No. 547,729
Term of patent 14 years
U.S. Cl. D7—14



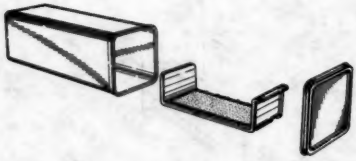
283,478
FOOD TRAY OR THE LIKE
Janice L. Schmidt, Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Oct. 24, 1983, Ser. No. 544,743
Term of patent 14 years
U.S. Cl. D7—19



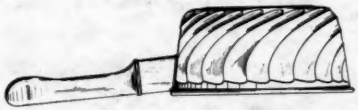
283,479
CONDIMENT SHAKER OR THE LIKE
James B. Swett, Altamonte Springs, Fla.; Erik Herlow, Gothersgade, Denmark, and Robert H. C. M. Daenen, Blakmeers, Belgium, assignors to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 3, 1983, Ser. No. 471,627
Term of patent 14 years
U.S. Cl. D7—54

283,480
CASK COOLER
Phillip J. Bailey, 15 Emma St., Caulfield, 3162 Victoria, Australia
Filed Sep. 7, 1983, Ser. No. 530,100
Term of patent 14 years
U.S. Cl. D7—77

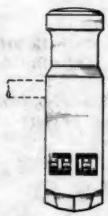
283,481
FOOD CONTAINER OR THE LIKE
Janice L. Schmidt, Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Oct. 24, 1983, Ser. No. 544,744
Term of patent 14 years
U.S. Cl. D7—82



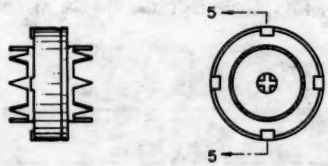
283,482
SAUCEPAN OR SIMILAR ARTICLE
Jean-Jacques Durand, LaButte, 62510 Arques, France
Filed Nov. 21, 1983, Ser. No. 553,783
Term of patent 14 years
U.S. Cl. D7—361



283,483
ROLLER-EQUIPPED WEDGE
George Hillinger, Los Angeles, Calif., assignor to Alltrade Inc., Commerce, Calif.
Filed Mar. 4, 1983, Ser. No. 472,334
Term of patent 14 years
U.S. Cl. D8—47



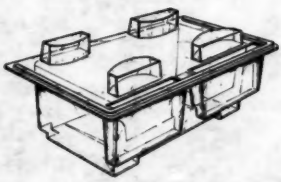
283,484
TWO-PARTS LOCK CLOSURE FOR PORTABLE CONTAINERS
Yoshihiro Aoki, Tokyo, Japan, assignor to Application Art Laboratories Co., Ltd., Tokyo, Japan
Filed Jun. 22, 1983, Ser. No. 506,783
Term of patent 14 years
U.S. Cl. D8—331



283,485
LATCHING BRACKET FOR THE LOWER END OF A SUPPORT ARM OF A RETRACTABLE AWNING
Richard B. Rader, Thornton; Donald S. McKee, Louisville, and Antony W. Quinn, Westminster, all of Colo., assignors to The Scott & Fetzer Company, Westlake, Ohio
Filed Aug. 18, 1983, Ser. No. 524,400
Term of patent 14 years
U.S. Cl. D8—354

283,486
SEPARABLE CONDUIT COUPLING OR THE LIKE
Robert Fogel, and Frank Guginsky, both of Commack, N.Y., assignors to Efcor Inc., East Farmingdale, N.Y.
Filed May 4, 1983, Ser. No. 491,599
Term of patent 14 years
U.S. Cl. D8—396

283,487
PACKAGING CONTAINER FOR DENTAL ARTICLES
Robert D. Holewinski, Lakehurst, and Douglas Fitzsimmons, Howell, both of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Aug. 16, 1982, Ser. No. 408,361
Term of patent 14 years
U.S. Cl. D9—341

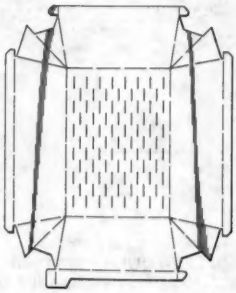


283,488
PACKAGING CONTAINER FOR AN ELECTRICAL SWITCH
James T. Stevens, San Antonio, Tex., assignor to Power Controls Corp., San Antonio, Tex.
Filed Dec. 9, 1983, Ser. No. 559,955
Term of patent 14 years
U.S. Cl. D9—345

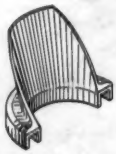
283,489
PACKAGING CONTAINER FOR AN ELECTRICAL SWITCH
James T. Stevens, San Antonio, Tex., assignor to Power Controls Corp., San Antonio, Tex.
Filed Dec. 9, 1983, Ser. No. 559,954
Term of patent 14 years
U.S. Cl. D9—345

283,490
COMBINED DISPENSING CONTAINER AND CAP
John H. Morgan, Chatham, and John A. Grip, Wayne, both of N.J., assignors to American Cyanamid Co., Stamford, Conn.
Filed Mar. 18, 1983, Ser. No. 476,905
Term of patent 14 years
U.S. Cl. D9—404

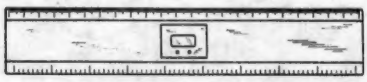
283,491
BLANK FOR TRAY TYPE CARTON
Gordon D. Edwards, Lydiate, England, assignor to Metal Box p.l.c., England
Filed Oct. 21, 1983, Ser. No. 544,247
Claims priority, application United Kingdom, Apr. 25, 1983, 831012687
Term of patent 14 years
U.S. Cl. D9—433



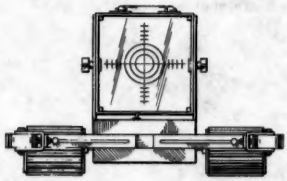
283,492
POUR SPOUT FOR A CAN OR THE LIKE
Reinhold Nitsch, 4434 44B Ave., Delta British Columbia, Canada V4K 1H2
Filed Dec. 23, 1983, Ser. No. 565,203
Term of patent 14 years
U.S. Cl. D9—436

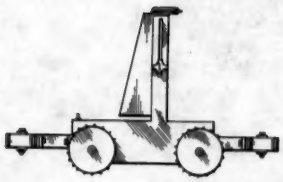


283,493
COMBINED RULER AND CLOCK
Robert S. K. Li, 2/F., Lee Kee Commercial Bldg. 233 Queen's Rd. Central, Hong Kong, Hong Kong
Filed Aug. 3, 1983, Ser. No. 520,114
Claims priority, application United Kingdom, May 20, 1983, 831013163
Term of patent 14 years
U.S. Cl. D10—2

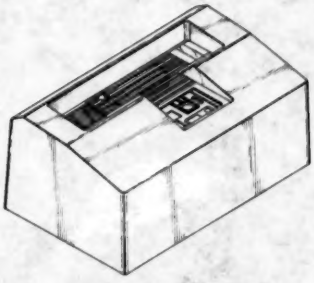


283,494
RADIO SIGNAL CONTROLLED LASER BEAM INTERRUPTING DITCH SLOPE INDICATOR
Jimmy C. Simmons, 4701 Wheatland, Enid, Okla. 73701
Filed Dec. 27, 1983, Ser. No. 565,669
Term of patent 14 years
U.S. Cl. D10—65



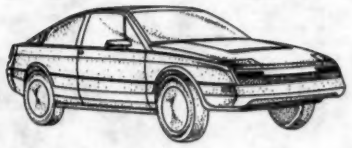


283,495
ANTITHEFT UNIT
Andre Wavre, Geneva, Switzerland, assignor to 3S S.A., Geneva, Switzerland
Filed Oct. 3, 1984, Ser. No. 657,871
Term of patent 14 years
U.S. Cl. D10—106

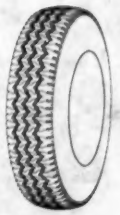


283,496
PLANT SUPPORTING DEVICE
Robert S. Pisarkiewicz, 412 Bedford La., Ballwin, Md. 63011
Filed Sep. 26, 1984, Ser. No. 654,139
Term of patent 14 years
U.S. Cl. D11—164

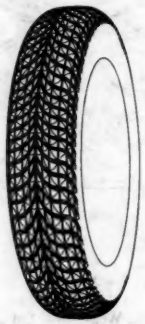
283,497
AUTOMOBILE
Stewart D. Reed, 25052 Woodridge, Lake Forest, Calif. 92630, and Dennis D. Campbell, 28126 Palomar Ct., Laguna Niguel, Calif. 92677
Filed Oct. 12, 1983, Ser. No. 541,506
Term of patent 14 years
U.S. Cl. D12—91



283,498
TIRE
Andre E. J. Baus, Bettembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 23, 1984, Ser. No. 602,860
Claims priority, application Benelux, Dec. 16, 1983, 11638 00
Term of patent 14 years
U.S. Cl. D12—143



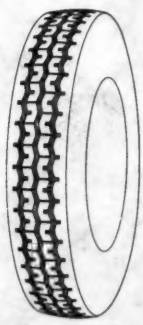
283,499
TIRE
Philip S. Hammond, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 13, 1984, Ser. No. 570,704
Term of patent 14 years
U.S. Cl. D12—146



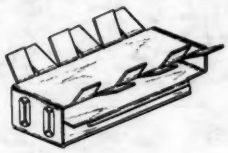
283,500
TIRE
Maurice Graas, Luxembourg, and Joe Kneip, Ettelbruck, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 27, 1984, Ser. No. 584,182
Claims priority, application Benelux, Sep. 12, 1983, 30403-00
Term of patent 14 years
U.S. Cl. D12—147

283,501
TIRE
Leo J. Hitzky, Walferdange, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 27, 1984, Ser. No. 604,551
Claims priority, application Luxembourg, Dec. 16, 1983, 1163700
Term of patent 14 years
U.S. Cl. D12—147

283,502
TIRE
Walter W. Hinkel, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 12, 1984, Ser. No. 599,371
Term of patent 14 years
U.S. Cl. D12—148



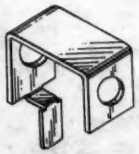
283,503
SLIDE-ON HEAT SINK FOR ENCASED ELECTRICAL PACKAGES
Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Mar. 25, 1983, Ser. No. 478,920
The portion of the term of this patent subsequent to Oct. 2, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—23



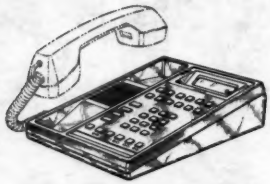
283,504
LAMP BASE
Harvey M. Leis, 3050 N. Hope St., Philadelphia, Pa. 19133
Filed Jul. 11, 1983, Ser. No. 512,527
Term of patent 14 years
U.S. Cl. D13—25

283,505
DOOR BELL PUSH BUTTON
Monte L. Levia, New York, and John J. Daly, Port Washington, both of N.Y., assignors to Square D Company, Palatine, Ill.
Filed Oct. 20, 1983, Ser. No. 543,733
Term of patent 14 years
U.S. Cl. D13—38

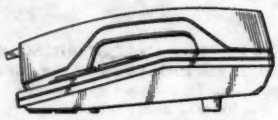
283,506
FOLDED FRAME FOR AN ELECTRIC SOLENOID
David C. Jencks, 25 Elm Park, Pleasant Ridge, Mich. 48069
Filed Jun. 21, 1983, Ser. No. 506,425
Term of patent 14 years
U.S. Cl. D13—99



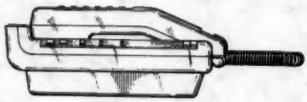
283,507
TELEPHONE CONSOLE
Frank L. Van Gilluwe, Mountain View, Calif., assignor to Teledex, Santa Clara, Calif.
Filed Nov. 10, 1983, Ser. No. 550,614
Term of patent 14 years
U.S. Cl. D14—62



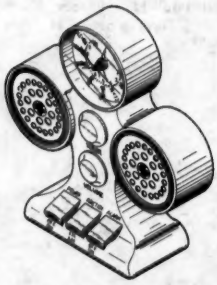
283,508
KEY TELEPHONE SET
Akijiro Miyake, Kawasaki, Japan, assignor to Nippon Tsushin Kogyo Kabushiki Kaisha, Kanagawa, Japan
Filed Dec. 1, 1983, Ser. No. 556,994
Claims priority, application Japan, Oct. 3, 1983, 58-42603
Term of patent 14 years
U.S. Cl. D14—53



283,509
TELEPHONE
Masato Shibayama, Sayama; Takeshi Abe, Tokyo; Yoshifumi Asakawa, Yokosuka; Seiji Kinoshita, and Kazuhisa Ogawa, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 343,596, Jan. 28, 1982, Pat. No. Des. 273,784. This application Aug. 18, 1983, Ser. No. 524,250
Claims priority, application Japan, Feb. 25, 1983, 58-7631
Term of patent 14 years
U.S. Cl. D14—53

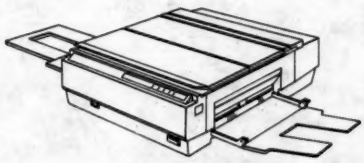


283,510
CLOCK-RADIO
Jian T. Hsu, No. 28, Alley 2, Lane 25, Min-Sheng St., Chung Ho City, Taipei Hsien, Taiwan
Filed Sep. 1, 1983, Ser. No. 528,541
Term of patent 14 years
U.S. Cl. D14—73



283,511
PORTABLE COMPUTER
James P. Dunn, Westport, Conn., assignor to MicroOffice Systems Technology, Fairfield, Conn.
Filed Apr. 12, 1983, Ser. No. 484,370
Term of patent 14 years
U.S. Cl. D14—106

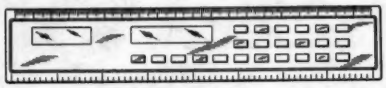
283,512
ELECTROSTATIC COPYING MACHINE
Toshio Umino; Yasuhiro Saito, and Tetsuya Goto, all of Kanagawa, Japan, assignors to Ricoh Company, Ltd., Japan
Filed Oct. 26, 1983, Ser. No. 545,651
Claims priority, application Japan, Apr. 26, 1983, 58-017818
Term of patent 14 years
U.S. Cl. D16—31



283,513
BASEBALL SAFETY SPECTACLES
Harold A. Spero, 3446 Old Green Rd., Beechwood, Ohio 44122
Filed Oct. 24, 1983, Ser. No. 544,782
Term of patent 14 years
U.S. Cl. D16—102

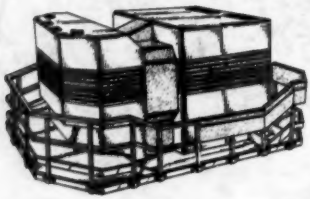
283,514
EYEGLASSES
Barton M. Levoy, 130 Cutter Mill Rd., Great Neck, N.Y. 11022
Filed Jan. 9, 1984, Ser. No. 569,330
Term of patent 14 years
U.S. Cl. D16—117

283,515
COMBINED RULER AND SOLAR CELL CALCULATOR
Robert S. K. Li, 2/F., Lee Kee Commercial Bldg., 233 Queen's Rd. Central, Hong Kong
Filed Aug. 2, 1983, Ser. No. 519,556
Claims priority, application United Kingdom, May 20, 1983, 1013165
Term of patent 14 years
U.S. Cl. D18—2

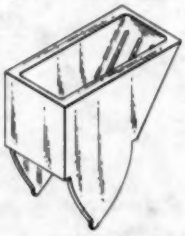


283,516
PEN
Tsung-Hsiung Huang, 12, La. 11, Ta Kuang Rd., Tainan, Taiwan 700
Filed Dec. 16, 1983, Ser. No. 562,262
Term of patent 14 years
U.S. Cl. D19—41

283,517
SIMULATOR ENCLOSURE OR SIMILAR ARTICLE
Haig Khachatoorian, and James S. Hughes, both of Columbus, Ohio, assignors to Simuflite Training International, Inc., Irving, Tex.
Filed Nov. 14, 1983, Ser. No. 551,783
Term of patent 14 years
U.S. Cl. D19—63



283,518
ESCROW BOX FOR COIN OPERATED MACHINES
Vedasto Gardellini, 23 Sheldon Pl., Commack, N.Y. 11725
Filed Nov. 25, 1983, Ser. No. 555,198
Term of patent 14 years
U.S. Cl. D20—8



283,519
TOY CLOWN FIGURE OR SIMILAR ARTICLE
Voula Begley, 393A Spotswood Englishtown Rd., Monroe, N.J. 08831
Filed Feb. 21, 1984, Ser. No. 581,724
Term of patent 14 years
U.S. Cl. D21—173

283,520
NOVELTY DOLL
Lydia C. Cortez, 15230 Dickens St., Sherman Oaks, Calif. 91403
Filed Dec. 14, 1983, Ser. No. 561,318
Term of patent 14 years
U.S. Cl. D21—175

283,521
VIDEO GAME HOUSING
Tetsuro Funai, Osaka, Japan, assignor to Funai Electric Company Limited, Daito, Japan
Filed Oct. 26, 1983, Ser. No. 545,742
Claims priority, application Japan, Jul. 28, 1983, 58-33513
Term of patent 14 years
U.S. Cl. D21—13

283,522
CRIB FERRIS WHEEL TOY
Leo J. Munson, Van Nuys; David T. Okada, Manhattan Beach, both of Calif.; Charlotte Eicher, Fort Mitchell, Ky., and Bernard Loomis, New York, N.Y., assignors to American Greetings Corporation, Cleveland, Ohio
Filed Feb. 21, 1984, Ser. No. 581,632
Term of patent 14 years
U.S. Cl. D21—63

283,523
BALL PUZZLE
Margit C. Balint, 2766 E. 126th St., Cleveland, Ohio 44120
Filed Feb. 22, 1983, Ser. No. 468,278
Term of patent 14 years
U.S. Cl. D21—104

283,524
TOY VEHICLE
Lori A. Petrosky, Cincinnati, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio
Filed Feb. 8, 1984, Ser. No. 578,255
Term of patent 14 years
U.S. Cl. D21—128

283,525
TOY GUN
Hiroshi Yano, Moriguchi, Japan, assignor to Sekiden Co., Ltd., Osaka, Japan
Filed Apr. 27, 1983, Ser. No. 489,084
Claims priority, application Japan, Oct. 30, 1982, 57-049321
Term of patent 14 years
U.S. Cl. D21—147

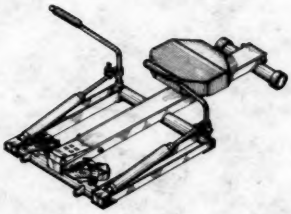
283,526
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station; William Davidson, Lakewood, both of Ohio, and Elena Kucharik, New Canaan, Conn., assignors to American Greetings Corporation, Cleveland, Ohio
Filed Jan. 13, 1984, Ser. No. 570,706
Term of patent 14 years
U.S. Cl. D21—159

283,527
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station; William Davidson, Lakewood, both of Ohio, and Elena Kucharik, New Canaan, Conn., assignors to American Greetings Corporation, Cleveland, Ohio
Filed Jan. 13, 1984, Ser. No. 570,707
Term of patent 14 years
U.S. Cl. D21—159

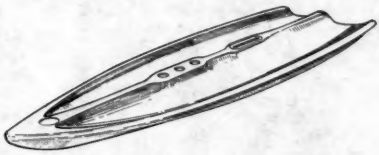
283,528
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station, and William Davidson, Lakewood, both of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Jan. 13, 1984, Ser. No. 570,708
Term of patent 14 years
U.S. Cl. D21—159

283,529
TOY FIGURE
Aubrey H. R. Baker, Brooklyn, N.Y., assignor to CPG Products Corp., Minneapolis, Minn.
Filed Feb. 13, 1984, Ser. No. 579,743
Term of patent 14 years
U.S. Cl. D21—171

283,530
EXERCISE ROWING MACHINE
David B. Smith, Mercer Island, and William W. Potts, Seattle, both of Wash., assignors to Precor, Incorporated, Redmond, Wash.
Filed Jan. 19, 1984, Ser. No. 572,567
Term of patent 14 years
U.S. Cl. D21—195



283,531
SAILBOARD HULL
Michael S. Smith, Strathfield, Australia, assignor to Illirrie Holdings Pty. Ltd., Australia
Filed Sep. 12, 1983, Ser. No. 531,607
Claims priority, application Australia, Jan. 13, 1983, 2648/83
Term of patent 14 years
U.S. Cl. D21—228

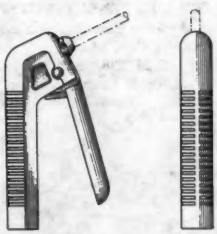


283,532
LONG RIFLE
Darrell E. Holland, and William P. Holland, both of P.O. Box 348, Powers, Oreg. 97466
Filed Sep. 26, 1983, Ser. No. 535,917
Term of patent 14 years
U.S. Cl. D22—6

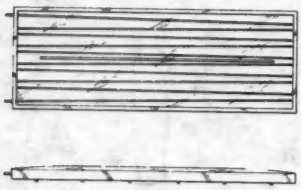
283,533
HAND HELD AIR VACUUM PUMP
Edward Evenson, Chicago, Ill., assignor to Milton Industries, Inc., Chicago, Ill.
Filed Jul. 25, 1983, Ser. No. 516,739
Term of patent 14 years
U.S. Cl. D23—15

283,534
SPRAYING DEVICE
David Powell, London, England, assignor to Imperial Chemical Industries PLC, London, England
Filed Nov. 10, 1983, Ser. No. 550,406
Claims priority, application United Kingdom, May 10, 1983, 1013038
Term of patent 14 years
U.S. Cl. D23—17

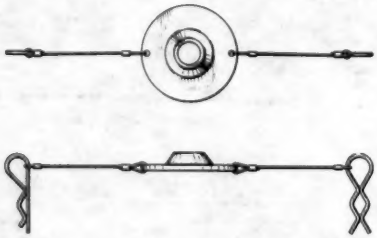
283,535
AIR BLOWER
Gaston Truchet, Faverges, France, assignor to S.A. des Etablissements Staubli, Faverges, France
Filed Feb. 25, 1983, Ser. No. 469,614
Term of patent 14 years
U.S. Cl. D23—17



283,536
SOLAR COLLECTOR
Richard L. Fossum, Rte. 3, Box 3738, Bulverde, Tex. 78163
Filed Dec. 2, 1983, Ser. No. 557,069
Term of patent 14 years
U.S. Cl. D23—72



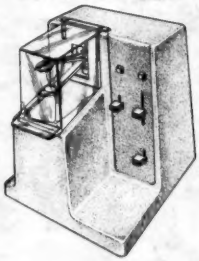
283,537
FILTER BAG TENSIONING SPACER
Robert E. Mace, Raytown, Mo., assignor to Standard Havens, Inc., Kansas City, Mo.
Filed Jul. 20, 1983, Ser. No. 515,647
Term of patent 14 years
U.S. Cl. D23—163



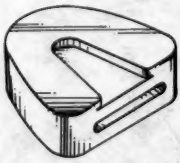
283,538
FILTER BAG TENSIONING SPACER
Robert E. Mace, Jackson County, Mo., assignor to Standard Havens, Inc., Kansas City, Mo.
Filed Jul. 20, 1983, Ser. No. 515,648
Term of patent 14 years
U.S. Cl. D23—163

283,539
CONTROL UNIT FOR LIGHT-ACTIVATED DENTAL RESTORATIVE SYSTEMS
Emerson J. Purkapile, Chicago, Ill., assignor to Sybron Corporation, Rochester, N.Y.
Filed Feb. 10, 1983, Ser. No. 465,628
Term of patent 14 years
U.S. Cl. D24—10

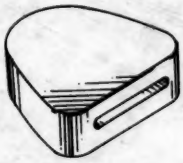
283,540
DENTAL AMALGAMATOR
Nolan K. Rhoades, Beloit, Wis., assignor to Crescent Dental Mfg. Co., Lyons, Ill.
Filed Apr. 18, 1983, Ser. No. 486,214
Term of patent 14 years
U.S. Cl. D24—10



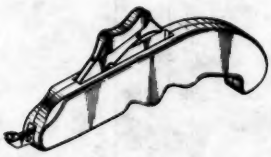
283,541
MOLDED FULL BASE DENTAL CAST WITH PEDESTAL
Ronald E. Huffman, Tucson, Ariz., assignor to KV33 Corporation, Tucson, Ariz.
Filed Apr. 25, 1983, Ser. No. 488,420
The portion of the term of this patent subsequent to Apr. 22, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—16



283,542
MOLDED FULL BASE DENTAL CAST
Ronald E. Huffman, Tucson, Ariz., assignor to KV33 Corporation, Tucson, Ariz.
Filed Apr. 25, 1983, Ser. No. 488,421
The portion of the term of this patent subsequent to Apr. 22, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—16

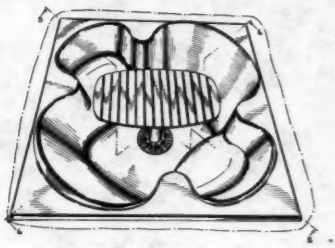


283,543
NEEDLE EXTRACTOR
Takayuki Nakamoto, Tokyo, Japan, assignor to Iwata Electric Works Co., Ltd., Tokyo, Japan
Filed Mar. 21, 1983, Ser. No. 477,352
Claims priority, application Japan, Dec. 2, 1982, 57-54363
Term of patent 14 years
U.S. Cl. D24—27

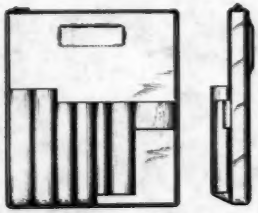


283,544
SURGICAL KNIFE HANDLE
Friedrich W. Schmidt, Ephrata, and Lester W. Moll, Wyomissing Hills, both of Pa., assignors to Sharpoint Inc., Reading, Pa.
Filed Dec. 23, 1982, Ser. No. 452,741
Term of patent 14 years
U.S. Cl. D24—30

283,545
COMBINED CLOVERLEAF SPA AND TABLE THEREFOR
Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 9, 1984, Ser. No. 569,219
Term of patent 14 years
U.S. Cl. D24—38

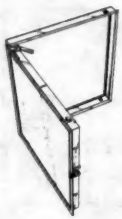


283,546
MEDICAL BAG
Michael Nathan, New York, N.Y., assignor to Denicotea, Inc., New York, N.Y.
Filed Jul. 29, 1983, Ser. No. 518,750
Term of patent 14 years
U.S. Cl. D24—99

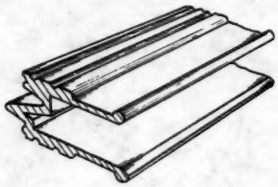


283,547
CHAIN LINK FENCING
Mario Ghizzi, Orange, Calif., assignor to Davis Walker Corporation, Los Angeles, Calif.
Filed May 12, 1983, Ser. No. 493,812
Term of patent 14 years
U.S. Cl. D25—45

283,548
ACCESS DOOR
Hiromitsu Naka, c/o Tokyo Kenkyusho of Kabushiki Kaisha Naka Gijutsu Kenkyusho No. 39, Oaza, Shinmachi, Yashio-shi, Saitama-ken, Japan
Filed Jul. 18, 1983, Ser. No. 515,373
Term of patent 14 years
U.S. Cl. D25—48

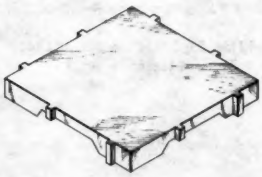


283,549
EXTRUSION
Phillip J. Burkinshaw, 1-3 Little Charles St., Abbotsford, Victoria, 3067, Australia
Filed Jul. 8, 1983, Ser. No. 512,031
Term of patent 14 years
U.S. Cl. D25—74

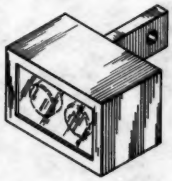


283,550
SIDE RAIL FOR ROLLING GATES
Vincent Greco, 195 Huntington Ave., Bronx, N.Y. 10465
Filed May 16, 1983, Ser. No. 495,124
Term of patent 14 years
U.S. Cl. D25—74

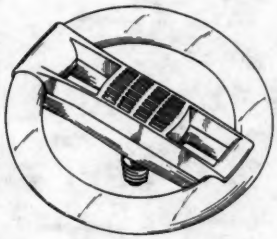
283,551
PAVING BLOCK
John Repasky, R.D. #4 Bender Rd., Hanover, Pa. 17331
Filed Aug. 4, 1983, Ser. No. 520,416
Term of patent 14 years
U.S. Cl. D25—80



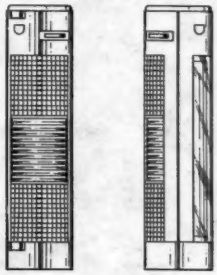
283,552
SELF-POWERED DROGUE LIGHT
Jerome Brillo, and Harry H. Dooley, both of Tucson, Ariz., assignors to TLS Systems, Inc., Tucson, Ariz.
Filed Apr. 15, 1983, Ser. No. 485,447
Term of patent 14 years
U.S. Cl. D26—24



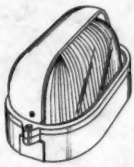
283,553
COMBINED FLUORESCENT LAMP AND ADAPTER THEREFOR
Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024
Filed Sep. 29, 1982, Ser. No. 426,774
Term of patent 14 years
U.S. Cl. D26—26



283,554
COMBINED FLUORESCENT LANTERN AND SPOTLIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Hong Kong, Hong Kong
Filed May 26, 1983, Ser. No. 498,558
Claims priority, application United Kingdom, Feb. 17, 1983, 1011487
Term of patent 14 years
U.S. Cl. D26—42



283,555
WALL LAMP
Sandro Levi, Brescia, Italy, assignor to Goccia S.r.l., Italy
Filed Oct. 6, 1983, Ser. No. 539,567
Term of patent 14 years
U.S. Cl. D26—85



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF APRIL, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. O. Smith Harvestore Products, Inc.: *See*—
Silverthorn, Charles R.; and Sancken, Ernest H., 4,583,662, Cl. 222-43.000.

Aannemingsbedrijf Luymes & Bal en van der Straaten B.V.: *See*—
Hofman, Hendrik, 4,583,879, Cl. 404-73.000.

AB Volvo: *See*—
Carlstedt, Hans, 4,583,762, Cl. 280-801.000.

Abe, Tetsuya: *See*—
Murakami, Yoshio; Obara, Kenjiroh; Abe, Tetsuya; Shimomura, Yasuo; and Shibata, Takemasa, 4,583,394, Cl. 73-40.700.

Abendroth, Paul; Dettinger, Dietrich; Holl, Roland; and Schales, Wolfgang, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Sheet-fed printing machine with means for cutting sheets longitudinally. 4,583,459, Cl. 101-217.000.

Abo, Keiju: *See*—
Kumura, Haruyoshi; Yamamuro, Sigeaki; Tanaka, Yoshikazu; Hirano, Hiroyuki; and Abo, Keiju, 4,583,627, Cl. 192-0.076.

ABU Aktiebolag: *See*—
Karlsson, Jardin U., 4,583,699, Cl. 242-84.420.

Ackermann, Wolfgang: *See*—
Hornung, Walter; Hametner, Gerhard; Ackermann, Wolfgang; Benkowitz, Lothar; Hofmann, Peter; Koch, Dieter; and Hemming, Herbert, 4,583,756, Cl. 280-432.000.

Adachi, Haruhiko, to Kubota Trane Ltd. Air conditioning system utilizing a Karman vortex detecting type flowmeter. 4,583,683, Cl. 236-49.000.

Adachi, Hiroo, to Pioneer Electronic Corporation. Balance control circuit. 4,584,536, Cl. 330-295.000.

Adachi, Meiro; and Hamada, Kenji, to Pfizer Inc. Herbicidal compositions containing salinomycin. 4,584,009, Cl. 71-88.000.

Adair, George E.: *See*—
Raketti, Raymond; Schreiber, Daniel; Orgovan, Andrew J.; Adair, George E.; and Burrage, Lawrence M., 4,584,429, Cl. 174-18.000.

Adams, Donald: *See*—
Powers, Robert B.; Adams, Donald; and Marsocci, Angelo A., 4,584,485, Cl. 250-574.000.

Adams, Ronald D.: *See*—
Chia, E. Henry; and Adams, Ronald D., 4,584,029, Cl. 148-2.000.

Adams, Thomas E.; Grant, Edward R.; Rockney, Bennett H.; and Morrison, Richard J. S., to Cornell Research Foundation, Inc. Electromagnetic valve for pulsed molecular beam. 4,583,710, Cl. 251-129.100.

Adco Products, Inc.: *See*—
Bacon, Charles R., 4,584,153, Cl. 264-169.000.

Adelman, Herbert B., to Crowell Corporation, The. Protective material and use. 4,584,225, Cl. 428-71.000.

Adolphs, Peter: *See*—
Gardziella, Arno; Adolphs, Peter; and Kwasniok, Alois, 4,584,329, Cl. 523-145.000.

Advanced AG Systems, Inc.: *See*—
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Advanced Circuit Technology, Inc.: *See*—
Roberts, Joseph A.; and Stearns, Thomas H., 4,583,800, Cl. 339-17.00F.

AEG KABEL Aktiengesellschaft: *See*—
Domorazek, Gottfried, 4,584,555, Cl. 340-71.000.

Agence Spatiale Europeenne: *See*—
Lijphart, Enno E.; and Drewes, Gerardus, 4,584,534, Cl. 329-122.000.

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Saito, Kiyoshi; and Nanba, Mitsuo, 4,584,421, Cl. 585-241.000.

AGFA-Gevaert, N.V.: *See*—
Thiers, Christiaan G., 4,583,850, Cl. 355-91.000.

Ahlstone, Arthur. Wireline blowout preventer. 4,583,569, Cl. 137-246.220.

Aicher, Albrecht; Lehmann, Gunter; Petri, Norbert; Pitteroff, Walter; Reuss, Gunter; Schreiber, Hans; and Sebastian, Robert, to BASF Aktiengesellschaft. Preparation of formaldehyde. 4,584,412, Cl. 568-473.000.

Aioi Keiki K.K.: *See*—
Yonezawa, Keitaro; and Yamada, Sohei, 4,583,631, Cl. 198-345.000.

Aisin Seiki K.K.: *See*—
Suzuki, Akira; Oumi, Takeharu; Takamiya, Sanshiro; and Nakazawa, Hideo, 4,583,525, Cl. 128-1.00D.

Aisin Seiki Kabushiki Kaisha: *See*—
Frank, Andrew A.; and Omitsu, Takashi, 4,583,505, Cl. 123-198.00F.
Fukura, Kenichi; Nagata, Kazuhisa; and Yamauchi, Nobuhiro, 4,583,713, Cl. 254-126.000.
Hayashi, Masaharu; and Itakura, Masato, 4,583,625, Cl. 192-58.00A.
Tsubouchi, Kaoru; and Nishii, Michiharu, 4,583,366, Cl. 60-547.100.

Ajinomoto Co., Inc.: *See*—
Otani, Masaru; Sano, Chiaki; and Kusumoto, Isao, 4,584,400, Cl. 562-443.000.

Akao, Mutsuo: *See*—
Hirose, Masuhiko; and Akao, Mutsuo, 4,584,234, Cl. 428-323.000.

Akasofu, Kyosuke, to Mitsubishi Denki Kabushiki Kaisha. Numerical control apparatus. 4,584,638, Cl. 364-136.000.

Akiyama, Morio: *See*—
Yamakawa, Takashi; Otani, Jkuhei; and Akiyama, Morio, 4,583,568, Cl. 137-240.000.

Akiyama, Toru, to Pioneer Electronic Corporation. Chroma signal phase correction circuitry to be used in a color video information playback system. 4,584,614, Cl. 358-312.000.

Akzo Nv: *See*—
Droste, Reinhard, 4,584,228, Cl. 428-182.000.

Alario, Joseph P.; and Haslett, Robert A., to United States of America, National Aeronautics and Space Administration. Multi-leg heat pipe evaporator. 4,583,587, Cl. 165-104.260.

Alba, Andrew J.: *See*—
Gordon, Robert L.; Bodary, Michael; and Alba, Andrew J., 4,583,680, Cl. 229-45.00R.

Albers, Karl; and Schwade, Hans, to Bergemann GmbH. Soot blower. 4,583,496, Cl. 122-379.000.

Albrecht, Harry A.; Konzelmann, Frederick M.; and Keith, Dennis D., to Hoffmann-La Roche Inc. 1-(N-phosphinylcarbamoyl) β-lactam antibacterial agents. 4,584,132, Cl. 260-239.00A.

Alcan International Limited: *See*—
Gray, Alan; and Miller, William S., 4,584,173, Cl. 420-533.000.
Tremblay, Joseph A.; and Talbot, Lionel E., 4,584,458, Cl. 219-137.710.

Alexander, John H.: *See*—
Sterling, Henley F.; Bush, Eric L.; and Alexander, John H., 4,584,074, Cl. 204-181.100.

Alexander, Lloyd E.: *See*—
Beaver, R. Neal; Alexander, Lloyd E.; and Byrd, Carl E., 4,584,085, Cl. 204-290.00R.

Alfonso, Giovanni C.; Russo, Saverio; Pedemonte, Enrico; Turturro, Antonio; and Puglisi, Concetto, to Consiglio Nazionale Delle Ricerche. Process for preparing self-extinguishing formed thermo-plastic bodies based on polycaprolactam. 4,584,149, Cl. 264-5.000.

Ali, Mir A. Flexible endoscope structure. 4,583,526, Cl. 128-6.000.

Aligena AG: *See*—
Linder, Charles; and Perry, Mordechai, 4,584,103, Cl. 210-650.000.

Alinabal Inc.: *See*—
Keller, Joseph R., 4,583,272, Cl. 29-110.000.

Allan, Thomas T.; and Cramer, Robert V., to Flanders Filters, Inc. High efficiency particulate air filter and method of fabricating same. 4,584,005, Cl. 55-499.000.

Allen, David A., to Huffy Corporation. Breakaway basketball goal. 4,583,732, Cl. 273-1.50R.

Allen, David M., to Tallgrass Technologies Corporation. Format for storing data on magnetic media. 4,584,616, Cl. 360-48.000.

Allen, J. Warren: *See*—
Lilley, George M., 4,584,096, Cl. 209-166.000.

Allied Corporation: *See*—
Basu, Rajat S.; Lund, Earl A. E.; Pham, Hang T.; Wilson, David P.; and Magid, Hillel, 4,584,122, Cl. 252-171.000.
Chlanda, Frederick P.; and Mani, Krishnamurthy N., 4,584,077, Cl. 204-182.400.
Gliha, Edward R., Jr., 4,583,810, Cl. 339-147.00R.
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,584,347, Cl. 525-119.000.
Hemmer, Valentine J., 4,583,290, Cl. 29-874.000.
Kaminski, Henry, 4,584,514, Cl. 320-33.000.
Lao, Binneg Y., 4,584,475, Cl. 250-332.000.
Nalewajek, David; McCurry, Lynn E.; Friedland, David J.; and Eibeck, Richard E., 4,584,184, Cl. 423-15.000.
Ritsema, Irving R., 4,583,623, Cl. 188-264.00G.
Towers, Kenneth S.; and Eddy, William C., 4,584,488, Cl. 307-106.000.
Werth, Dee A.; Brush, Robert W., Sr.; and Pressel, Paul L., 4,583,809, Cl. 339-143.00R.

Allis-Chalmers Corporation: *See*—
Ball, James H.; Sheth, Pradip N.; and Rouch, Keith E., 4,583,912, Cl. 415-119.000.

Allison, Clifford: *See*—
Bivins, William F.; and Allison, Clifford, 4,584,589, Cl. 343-882.000.

Alsthom-Atlantique: *See*—
Coulon, Andre , 4,584,081, Cl. 204-272.000.

Aluminum Company of America: *See*—
Ray, Siba P.; and Rapp, Robert A., 4,584,172, Cl. 419-34.000.

Alvarado, Alfredo. Surgical stapling. 4,583,670, Cl. 227-19.000.

ALZA Corporation: *See—*
Urquhart, John; and Theeuwes, Felix, 4,583,981, Cl. 604-80.000.
Amada Company, Limited: *See—*
Tanaka, Kikuo; and Washio, Isomi, 4,583,326, Cl. 51-81.00R.
Amari, Shinji; and Nakagawa, Tomihiro, to Sony Corporation. Apparatus for recording video signals at a plurality of different recording speeds. 4,584,613, Cl. 358-310.000.
American Cyanamid Company: *See—*
Fu, Yun-Lung; and Wang, Samuel S., 4,584,097, Cl. 209-166.000.
American District Telegraph Company: *See—*
Powers, Robert B.; Adams, Donald; and Marsocci, Angelo A., 4,584,485, Cl. 250-574.000.
American Home Products Corporation: *See—*
Mobilio, Dominick; Demerson, Christopher A.; and Humber, Leslie G., 4,584,312, Cl. 514-411.000.
American Standard Inc.: *See—*
Scott, Daniel G., 4,583,790, Cl. 303-23.00R.
American Sterilizer Company: *See—*
Fisher, Kenneth J.; and Roche, John N., 4,583,655, Cl. 220-346.000.
Amigo, Jorge L., to Westinghouse Electric Corp. AC electric energy meter having shielded radiation responsive data interface. 4,584,527, Cl. 324-157.000.
Amoco Corporation: *See—*
Parma, Richard E., 4,583,397, Cl. 73-152.000.
AMP Incorporated: *See—*
Bricker, Michael W., 4,583,432, Cl. 82-1.00C.
Gross, Robert E., Jr.; Heck, Teresa K.; Sturner, William P.; and Yeow, Yew-Thye, 4,583,812, Cl. 339-259.00R.
Kaufman, John W.; and Rubendall, Douglas C., 4,583,807, Cl. 339-125.00R.
Yamada, Hiromi, 4,583,813, Cl. 339-91.00R.
Ampex Corporation: *See—*
Chan, Steven S., 4,584,556, Cl. 340-146.200.
Amram, Maurice. Method and apparatus for controlling noise. 4,583,615, Cl. 181-210.000.
Anantaraman, Ayilam V., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Viscometer. 4,583,395, Cl. 73-55.000.
Anderl, Siegfried: *See—*
Dangel, Artur; Frech, Josef; Niess, Willi; Prillipp, Rolf, deceased; Riegert, Hermann; Wittlinger, Gerhard; and Anderl, Siegfried, 4,583,449, Cl. 99-279.000.
Anderson Company of Indiana, The: *See—*
Will, Terry M., 4,583,259, Cl. 15-250.420.
Anderson, Gerald J. Ground working sweep. 4,583,599, Cl. 172-730.000.
Anderson, James M.; and Dean, William C., to FMC Corporation. Drive and brake assembly. 4,583,609, Cl. 180-65.500.
Anderson, Kenneth J., to Assembled Components Company, Inc. Storage holder for a container. 4,583,707, Cl. 248-293.000.
Anderson, Martin L., to Partnership of Lloyd E. Anderson, Betty P. Anderson and Martin L. Anderson. Carpet seaming apparatus. 4,584,040, Cl. 156-152.000.
Anderson, Robert C.: *See—*
Kroeger, Daniel E.; and Anderson, Robert C., 4,583,429, Cl. 81-3.550.
Ando, Narumi; Oda, Kito; Saiki, Takashi; Hashimoto, Yoshiaki; Tsuyuki, Akira; and Kitazawa, Yoshio, to Nippon Steel Corporation. Method and apparatus for the continuous electrolytic treatment of a metal strip using insoluble horizontal electrodes. 4,584,066, Cl. 204-28.000.
Ando, Takeki; Kurosawa, Toshiaki; Kuroha, Hiroaki; and Sakai, Yoshio, to Hitachi, Ltd. AC-to-DC power converter with improved power factor and overvoltage suppression. 4,584,636, Cl. 363-54.000.
Andrus, Milton H., Jr.: *See—*
Dell, John D.; and Andrus, Milton H., Jr., 4,584,192, Cl. 424-81.000.
Angelov, Mihail H.: *See—*
Mintchev, Pavel M.; Angelov, Mihail H.; Hristov, Hristomir D.; Balinov, Stoimen S.; and Yordanov, Nikolay V., 4,583,673, Cl. 228-37.000.
Angus Chemical Company: *See—*
Germane, Geoff J.; and Hess, Gary L., 4,583,991, Cl. 44-72.000.
Anzai, Kazuhiro: *See—*
Nakajima, Noriaki; Imaizumi, Toshimasa; and Anzai, Kazuhiro, 4,583,796, Cl. 312-214.000.
Anzai, Shunju: *See—*
Taniguchi, Akihiko; and Anzai, Shunju, 4,583,836, Cl. 355-14.0CH.
Aoki, Mitsuo: *See—*
Nakayama, Nobuhiro; Isoda, Tetsuo; Watanabe, Yoichiro; and Aoki, Mitsuo, 4,584,254, Cl. 430-108.000.
Aoki, Shigehiko; Onotani, Shizuo; Shimotaka, Toshinobu; and Nakamura, Yoshitaka, to Mazda Motor Corporation. Flexible exhaust coupling. 4,583,768, Cl. 285-41.000.
Aoyama, Shuji, to Bill Checker Co., Ltd. Method and apparatus for discriminating between genuine and suspect paper money. 4,584,529, Cl. 324-261.000.
APEC Freizeitanlagen GmbH: *See—*
Lehmann, Rainer, 4,583,479, Cl. 114-345.000.
Apffel, Fred, to Flexivol, Inc. Process for recovering propane and heavier hydrocarbons from a natural gas stream. 4,584,006, Cl. 62-30.000.
APL Corporation: *See—*
Fishman, A. Harry; and Bottitta, Joseph, 4,583,667, Cl. 222-142.600.
Aplin & Barrett, Ltd.: *See—*
Taylor, Stephen L., 4,584,199, Cl. 426-36.000.
Applied Motion Products, Inc.: *See—*
Kordik, Kenneth S., 4,584,495, Cl. 310-49.00R.
Appun, Ernst: *See—*
Klages, Horst; Bonatz, Hartmut; Appun, Ernst; Wahnschaffe, Klaus-Dieter; Friedrich, Baldur; and Jakal, Karl H., 4,584,463, Cl. 219-306.000.
Arai, Kiyoshi: *See—*
Komoto, Nobuo; Arai, Kiyoshi; and Hirose, Setsuko, 4,584,311, Cl. 514-399.000.
Suzuki, Masakuni; Maeyama, Sadao; Arai, Kiyoshi; Kaneko, Yoshio; and Fujito, Shohgo, 4,584,601, Cl. 358-80.000.
Arai, Nobuichi; and Asano, Hidejiro, to Nippon Steel Corporation. Steel sheet, and a production process therefor, for use in the manufacture of an end for an easy-to-open can: and an end for an easy-to-open can. 4,584,035, Cl. 148-36.000.
Arakawa, Hideki; and Kawashima, Hiromi, to Fujitsu Limited. Semiconductor timer. 4,584,494, Cl. 307-603.000.
Arakawa, Kazumi; Sugie, Masuo; Watanabe, Takashi; Nishio, Takumi; Kawamura, Toshio; Nagahata, Tsutomu; and Matsushita, Takashi, to Toshiba Ceramics Co., Ltd. Molten metal discharging device. 4,583,721, Cl. 266-220.000.
Araki, Yusuke: *See—*
Mukae, Makito; and Araki, Yusuke, 4,584,049, Cl. 156-396.000.
Arav, Ronnie A., to Beloit Corporation. Valves. 4,583,567, Cl. 137-115.000.
Arcadian Corporation: *See—*
Wolff, Robert L.; Watson, Dennis G.; and Clapp, John G., Jr., 4,583,319, Cl. 47-1.700.
Arcara, Samuel A., to Honeywell Inc. Analog to digital converter. 4,584,566, Cl. 340-347.0AD.
Archibald, Roger D.: *See—*
La Barre, Marcus A.; Trask, Jeffrey L.; and Archibald, Roger D., 4,583,660, Cl. 222-1.000.
Argazzi, Ivo, to Industria Macchine Automatiche - S.p.A. Assembly for unfolding flattened cartons in packaging machinery. 4,583,965, Cl. 493-313.000.
Ariga, Kazuo: *See—*
Teshima, Toru; Ariga, Kazuo; and Yoshida, Mitsunari, 4,584,461, Cl. 219-209.000.
Arisawa, Takashi; Maruyama, Yoichiro; Suzuki, Youji; and Iwamoto, Kazumi, to Japan Atomic Energy Research Institute. Process for separating an isotope from a mixture of different isotopes by using a single laser beam. 4,584,072, Cl. 204-157.220.
Armbruckner, Otto, to Tiefbohr-Technick GmbH & Co. KG. Tool changer. 4,583,892, Cl. 409-136.000.
Armco Inc.: *See—*
Lawson, John E., 4,583,746, Cl. 277-1.000.
Arnold, Roger D. Patient support frame for posterior lumbar laminectomy. 4,583,725, Cl. 269-328.000.
Aronne, Armand, to Grumman Aerospace Corporation. Sequentially pressurized flight suit. 4,583,522, Cl. 128-1.00A.
Arrem Plastics, Inc.: *See—*
Sweig, Stephen J., 4,584,157, Cl. 264-522.000.
Artusi, Aldo; and Hagmann, Peter. Process and device in particular for sealing containers with a foil or the like material. 4,583,350, Cl. 53-478.000.
Asahi Glass Company Ltd.: *See—*
Kuga, Kazuhiko; Washita, Hiroshi; Watanabe, Hiroyuki; Kurita, Kohji; and Harada, Takeshi, 4,584,245, Cl. 428-409.000.
Kurata, Motoharu, 4,584,007, Cl. 65-337.000.
Oda, Noriyuki; Watanabe, Haruo; and Morishita, Tomohiro, 4,584,003, Cl. 55-269.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Tango, Yasuo; and Kanazaki, Makoto, 4,583,266, Cl. 19-0.390.
Asakawa, Kenichi: *See—*
Higuchi, Seizun; Asakawa, Kenichi; and Okada, Nobuyoshi, 4,584,211, Cl. 427-320.000.
Asami, Masatoshi: *See—*
Mukaiyama, Teruaki; Sakito, Yoji; and Asami, Masatoshi, 4,584,387, Cl. 548-324.000.
Asano, Hidejiro: *See—*
Arai, Nobuichi; and Asano, Hidejiro, 4,584,035, Cl. 148-36.000.
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, to Permelec Electrode Ltd. Durable electrode for electrolysis and process for production thereof. 4,584,084, Cl. 204-290.00F.
Asano, Katsuaki: *See—*
Kayanuma, Akio; Nakamura, Minoru; and Asano, Katsuaki, 4,584,055, Cl. 156-628.000.
Asano, Kazuo, to Kabushiki Kaisha Asano Kenkyusho. Apparatus for trimming articles moldingly formed on plastic sheet. 4,583,436, Cl. 83-104.000.
Asano, Masaharu: *See—*
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Yamanaka, Hidetoshi; Nakai, Katsuyuki; Yuasa, Hisako; and Shida, Keizo, 4,584,136, Cl. 260-397.500.
Asaoka, Takemitsu: *See—*
Yokoi, Koichi; Hasegawa, Hiroshi; Narita, Tadashi; Asaoka, Takemitsu; Kukita, Kenichi; Ishizeki, Seiji; and Nakashima, Toshiaki, 4,584,377, Cl. 546-15.000.
Ashland Oil, Inc.: *See—*
Goel, Anil; and Tufts, Timothy, 4,584,363, Cl. 528-73.000.
Hosey, Richard E.; and Rich, Ervan E., 4,583,311, Cl. 40-611.000.
Aslund, Christer; and Tornberg, Claes. Method of making pipes by powder metallurgy and pipe blanks (semi-finished products) made in accordance therewith. 4,584,170, Cl. 419-5.000.

Assaf, Gad, to Geophysical Engineering Company. Heat exchanger and systems and methods for using the same. 4,583,370, Cl. 60-688.000.
Assembled Components Company, Inc.: *See*—
Anderson, Kenneth J., 4,583,707, Cl. 248-293.000.
AT&T Bell Laboratories: *See*—
Chance, Christopher P.; Coble, Ralph P., Jr.; Ingle, Edwin C.; and Jones, Joye A., 4,584,441, Cl. 179-170.200.
Choi, Jae H.; Fortner, Larry E.; Mottine, John J., Jr.; and Vesperman, William C., 4,584,241, Cl. 428-379.000.
AT&T Technologies: *See*—
Choi, Jae H.; Fortner, Larry E.; Mottine, John J., Jr.; and Vesperman, William C., 4,584,241, Cl. 428-379.000.
AT&T Technologies, Inc.: *See*—
Chapman, John L., Jr.; La Valle, Thomas A.; and Nelson, Peter S., 4,583,954, Cl. 445-7.000.
Dines, David R.; Svoboda, George; and Workman, Robert G., 4,583,674, Cl. 228-102.000.
Egan, James J.; Koze, Jeffrey T.; and Kumagai, Henry Y., 4,583,372, Cl. 62-53.000.
Smith, James V., Jr., 4,583,485, Cl. 118-68.000.
Wieczorek, Casey J., 4,583,708, Cl. 248-447.000.
Ateliers Sussmeyer SPRL: *See*—
Sussmeyer, Robert; Pluvinage, Alain; and Moenaert, Christian, 4,584,062, Cl. 202-197.000.
Atlantic Richfield Company: *See*—
Mackamul, Kevin K.; Morel, Don L.; and Tanner, David P., 4,584,427, Cl. 136-256.000.
Thornton, William B.; and Borchert, Alfred E., 4,584,413, Cl. 568-576.000.
Atochem: *See*—
Hermant, Marc; Basset, Dominique; and Razet, Jean-Claude, 4,584,116, Cl. 252-51.000.
Audhya, Tapan; Kroon, Daniel J.; Heavner, George; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Bursopoietin. 4,584,284, Cl. 514-18.000.
Aufderhaar, Erhard; Gruebl, Ernst; and Pfaff, Siegfried, to Krauss-Maffei A.G. Bearing seal for a centrifuge. 4,583,747, Cl. 277-3.000.
Augat Inc.: *See*—
McDevitt, John E.; and Senor, Ronald E., 4,583,287, Cl. 29-741.000.
Augusta Developments Inc.: *See*—
Hanson, Gustaf H., 4,583,944, Cl. 433-22.000.
Ausnit, Steven, to Minigrip, Inc. Chain of laterally interconnected bags. 4,584,706, Cl. 383-37.000.
Austel, Volkhard: *See*—
Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,584,293, Cl. 514-213.000.
Austin Company, The: *See*—
Shelangoskie, Donald R.; Brown, Jack H.; Jacobsen, Eric K.; Masterson, Patrick A.; Pierce, Ricky A.; Rogers, Barry A.; and Valentine, Lawrence J., 4,583,336, Cl. 52-250.000.
Austruy, Georges: *See*—
Fardeau, Benoit H.; Chapuis, Claude; and Austruy, Georges, 4,583,938, Cl. 431-79.000.
Aute Gesellschaft fur autogene Technik mbH: *See*—
Lotz, Horst K., 4,583,718, Cl. 266-48.000.
AVX Corporation: *See*—
Garcia, Ricardo; and Marion, Robert H., 4,584,629, Cl. 361-321.000.
Avxentiev, Anatoly G.: *See*—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Ertli, Alisa A.; Marina, Semen I.; Avxentiev, Anatoly G.; Lepetchenko, Stanislav N.; and Serzhantu, Ivan P., 4,583,977, Cl. 604-174.000.
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Moriya, Koichi, to Nihon Tokushu Noyaku Seizo K.K. Substituted phenoxypropionates and herbicidal compositions. 4,584,396, Cl. 560-63.000.
Ayabe, Tadaaki: *See*—
Ochiai, Izumi; Matui, Katuo; and Ayabe, Tadaaki, 4,583,675, Cl. 228-155.000.
Ayers, David B., to Dresser Industries, Inc. Shaped charge perforating device. 4,583,602, Cl. 175-4.200.
Azuchi, Yukihiro, to Murata Manufacturing Co., Ltd. Electronic component having rotary mechanism. 4,584,626, Cl. 361-293.000.
B. F. Goodrich Company, The: *See*—
Chasar, Dwight W., 4,584,146, Cl. 558-156.000.
Lehr, Marvin H., 4,584,349, Cl. 525-227.000.
B. Quad, Inc.: *See*—
Bowman, James M., 4,583,646, Cl. 211-32.000.
Baars, Nicolaas J.; and Quartly, Jonathan R., to U.S. Philips Corporation. Image rejection mixer circuit arrangement. 4,584,715, Cl. 455-302.000.
Baartmans, Hans R. Web of labels. 4,584,219, Cl. 428-42.000.
Babcock & Wilcox Company, The: *See*—
Bibb, Henry Q.; Merker, David E.; and Stark, Louis E., 4,583,672, Cl. 228-2.500.
Hall, George R., II, 4,583,859, Cl. 356-438.000.
Bachmann, Markus: *See*—
Drabek, Jozef; Legge, John; and Bachmann, Markus, 4,584,296, Cl. 514-147.000.
Bachmann, Theodor: *See*—
Janssen, Manfred; Schmidt, Volker; and Bachmann, Theodor, 4,583,773, Cl. 285-382.000.
Bacon, Charles R., to Adco Products, Inc. Butyl dispensing method. 4,584,153, Cl. 264-169.000.
Badiali, Roberto, to Officine Savio S.p.A. Splicer device to disassemble and recompose yarn mechanically. 4,583,356, Cl. 57-22.000.
Baer, Massimo, to Monsanto Company. Tough thermoplastic nylon compositions. 4,584,344, Cl. 525-66.000.
Bain, James M.: *See*—
Vanderpool, James L.; and Bain, James M., 4,584,047, Cl. 156-361.000.
Baker Oil Tools, Inc.: *See*—
Krause, William F., Jr.; and Hopmann, Mark E., 4,583,591, Cl. 166-217.000.
Baker, Peotr, to ITT Industries, Inc. Digital filter for the chrominance channel of a color-television set. 4,584,600, Cl. 358-40.000.
Baker, Ralph T., to Baker Safety Equipment, Inc. Portable fire escape. 4,583,616, Cl. 182-49.000.
Baker Safety Equipment, Inc.: *See*—
Baker, Ralph T., 4,583,616, Cl. 182-49.000.
Balakrishnan, Ramanatha V.: *See*—
Wong, Hee; Balakrishnan, Ramanatha V.; and Schneider, Herb O., 4,584,695, Cl. 375-81.000.
Baldwin, Roger E., to United Kingdom Atomic Energy Authority. Lightning protection for aircraft radomes. 4,583,702, Cl. 244-1.00A.
Balinov, Stoimen S.: *See*—
Mintchev, Pavel M.; Angelov, Mihail H.; Hristov, Hristomir D.; Balinov, Stoimen S.; and Yordanov, Nikolay V., 4,583,673, Cl. 228-37.000.
Balint, Janos; Cseke, Laszlo ; Fabian, Ferenc; Kun, Lajos; and Szarvas, Miklos, to Biogal Gyogyszergyar. Process for the preparation of an oxytetracycline-calcium silicate complex salt from fermentation broth. 4,584,135, Cl. 260-351.600.
Ball Corporation: *See*—
Cerny, Daryl D., 4,584,154, Cl. 264-209.200.
Taylor, Taliaferro H., Jr.; Johnk, Robert T.; and Garvin, Clifton W., 4,584,543, Cl. 333-103.000.
Ball, James H.; Sheth, Pradip N.; and Rouch, Keith E., to Allis-Chalmers Corporation. Damped dynamic vibration absorber. 4,583,912, Cl. 415-119.000.
Ballenger, Paul B., to Federal-Mogul Corporation. Abrasive cutting wheel for cutting rock-like material. 4,583,515, Cl. 125-15.000.
Ballocca, Guido, to S.A.I.A.G. S.p.A. Method for the continuous extrusion of an extrusion, particularly a weather strip for motor vehicle bodies. 4,584,150, Cl. 264-40.100.
Balmer, Oskar: *See*—
Focke, Heinz; and Balmer, Oskar, 4,583,571, Cl. 141-83.000.
Balzano, Quirino: *See*—
Kneisel, Thomas F.; Balzano, Quirino; and Freeburg, Thomas A., 4,584,709, Cl. 455-78.000.
Banfi, Elena: *See*—
Tubaro, Aurelia; Della Loggia, Roberto; Banfi, Elena; Cinco, Marina; and Redaelli, Claudio, 4,584,198, Cl. 424-195.100.
Banzai, Hideo: *See*—
Fujita, Shigeru; Banzai, Hideo; and Tanaka, Hideo, 4,583,931, Cl. 425-149.000.
Bareket, Noah, to Lockheed Missiles & Space Company, Inc. Optical phase measuring apparatus. 4,583,855, Cl. 356-351.000.
Barile, George C.; and Kaeding, Warren W., to Mobil Oil Corporation. Selective alkylation of xylenes with ethylene. 4,584,422, Cl. 585-467.000.
Barnhart, Ector E.: *See*—
Reid, Laurance S.; and Barnhart, Ector E., 4,583,998, Cl. 55-45.000.
Baroffio, Romano: *See*—
Nistri, Ugo; Baroffio, Romano; and Ghisu, Giuseppe, 4,583,698, Cl. 242-56.00R.
Barriac, Jacques J., to Owens-Illinois, Inc. Combination container with membrane sealed finish and tamper-indicating dispensing closure. 4,583,665, Cl. 222-83.000.
Barry, Joseph P. Sternal stabilization device. 4,583,541, Cl. 128-335.000.
Barter, James A.: *See*—
Tang, Robert H.; and Barter, James A., 4,584,142, Cl. 558-264.000.
Barth, Gunter; and von Langsdorff, Fritz, to F. von Langsdorff Bauverfahren GmbH. Interlocking ground covering elements and arrangements of them for mechanical laying. 4,583,341, Cl. 52-589.000.
Barth, Hubert: *See*—
Satzinger, Gerhard; Barth, Hubert; Hartenstein, Johannes; Herrmann, Manfred; Fritschi, Edgar; and Schutt, Ilse-Dore, 4,584,374, Cl. 544-247.000.
Bartholomew, Donald D., to Proprietary Technology. Manually releasable drainport closure apparatus. 4,583,650, Cl. 215-206.000.
Barthomeuf, Denise M., to Exxon Research & Engineering Company. Process for separating ethylbenzene from xylenes by selective adsorption on a Beta zeolite. 4,584,424, Cl. 585-828.000.
Bartlett, Philip L., to Du Pont de Nemours, E. I., and Company. Aerosol corrosion inhibitors. 4,584,021, Cl. 106-14.420.
Bartley, Gary L.: *See*—
Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., 4,584,511, Cl. 318-600.000.
Bartz, Stephen A.: *See*—
Lucht, Orren J.; and Bartz, Stephen A., 4,583,845, Cl. 355-46.000.
BASF Aktiengesellschaft: *See*—
Aicher, Albrecht; Lehmann, Gunter; Petri, Norbert; Pitteroff, Walter; Reuss, Gunter; Schreiber, Hans; and Sebastian, Robert, 4,584,412, Cl. 568-473.000.
Schlindwein, Heinz; and Ruhenbeck, Wolfgang, 4,583,401, Cl. 73-295.000.

Sterzel, Hans-Josef; Sanner, Axel; and Neumann, Peter, 4,584,359, Cl. 526-241.000.
Bass, Edmund P.; and Sharpee, Richard L., to Norden Laboratories, Inc. Inactivated rabies vaccine for veterinary use. 4,584,194, Cl. 424-89.000.
Basset, Dominique: *See—*
Hermant, Marc; Basset, Dominique; and Razet, Jean-Claude, 4,584,116, Cl. 252-51.000.
Bassetti, Piero, to Bassetti, S.p.A. Device for gathering and retaining a portion of a fabric. 4,583,478, Cl. 112-413.000.
Bassetti, S.p.A.: *See—*
Bassetti, Piero, 4,583,478, Cl. 112-413.000.
Basu, Rajat S.; Lund, Earl A. E.; Pham, Hang T.; Wilson, David P.; and Magid, Hillel, to Allied Corporation. Azeotrope-like compositions of trichlorotrifluoroethane, ethanol, nitromethane and 2-methylpentane or a mixture of hexanes. 4,584,122, Cl. 252-171.000.
Battelle Memorial Institute: *See—*
Gaud, Jacques V.; and Kornmann, Michel, 4,584,521, Cl. 324-54.000.
Battig, Udo; Dittrich, Peter; Oertel, Norbert; Osterland, Guter; Rucknagel, Mathias; Scheler, Werner; and Schultz, Klaus. Mounting table for wafers. 4,583,847, Cl. 355-53.000.
Bauer, Jon F.: *See—*
Jada, Sivananda S.; and Bauer, Jon F., 4,584,365, Cl. 528-271.000.
Baum, Burton M.: *See—*
Treves, Gino R.; and Baum, Burton M., 4,584,378, Cl. 546-124.000.
Baum, Theodore M. Vacuum single facer. 4,584,052, Cl. 156-473.000.
Bauman, Jack. Examining device with improved optical coupling between the light source and light conductor. 4,583,528, Cl. 128-11.000.
Bauman, Therese M.; Lee, Chi-Long; and Rabe, James A., to Dow Corning Corporation. Silicone foam, water-based, aerosol composition. 4,584,324, Cl. 521-88.000.
Baumberg, Iosif, to Danmine Siftware and Technology, Inc. Arrangement for elevating liquid by use of solar and/or wind energy. 4,583,918, Cl. 417-108.000.
Baxter Travenol Laboratories, Inc.: *See—*
Pekkarinen, Michael O.; Wolf, Ludwig, Jr.; and Woodworth, Walker, 4,583,975, Cl. 604-253.000.
Bayat, John J. Liquid dispensing system. 4,583,664, Cl. 222-61.000.
Bayer Aktiengesellschaft: *See—*
Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; Reinecke, Paul; and Rosslenbroich, Hans-Jurgen, 4,584,308, Cl. 514-383.000.
Holmwood, Graham; Lurssen, Klaus; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,584,373, Cl. 544-225.000.
Paul, Winfried; Nouvertne, Werner; Neuray, Dieter; Steinberger, Helmut; and Grape, Wolfgang, 4,584,360, Cl. 528-14.000.
BBC Brown, Boveri & Co., Ltd.: *See—*
Kunzli, Roland; Schroder, Gunther; and Singer, Robert, 4,583,720, Cl. 266-81.000.
Maschek, Martin; and Mastner, Georg, 4,584,558, Cl. 340-347.0AD.
Beachum, Gary T. Multi-station silk screen printer for printing varying indicia. 4,583,458, Cl. 101-126.000.
Beams, David M.: *See—*
Funk, David B.; Beams, David M.; and Grim, Dennis E., 4,584,655, Cl. 364-550.000.
Beard, Chester E. Animal trap. 4,583,317, Cl. 43-61.000.
Beaudoin, Daniel A., to Dow Chemical Company, The. Process for polymerizing poly-oxazoline in an ethylbenzene diluent. 4,584,352, Cl. 525-410.000.
Beausoleil, William F., to International Business Machines Corporation. Information display and editing system. 4,584,574, Cl. 340-744.000.
Beaver, R. Neal; Alexander, Lloyd E.; and Byrd, Carl E., to Dow Chemical Company, The. Preparation and use of electrodes. 4,584,085, Cl. 204-290.00R.
Becerra-Novoa, Jorge O.; Cantu-Hernandez, Francisco; and Martinez-Vera, Enrique R., to Hylsa, S.A. Method for controlling metallization and carburization in the reduction of metal ores to sponge iron. 4,584,016, Cl. 75-35.000.
Beck, Gerard A.: *See—*
Hazendonk, Teunis J.; Klinkhamer, Arend J.; Beck, Gerard A.; and Smit, Theodorus F., 4,584,697, Cl. 377-60.000.
Beck, William R.; Jahn, William; Koltenback, Steven R.; Scharf, Robert M.; and Schwab, Ronald, to Thomas & Betts Corporation. System and apparatus for termination of flat cable. 4,583,289, Cl. 29-749.000.
Becker, Johann A.; and Zell, Werner, to U.S. Philips Corporation. Apparatus for manufacturing an optical cable element. 4,583,929, Cl. 425-71.000.
Beecham Group p.l.c.: *See—*
Harbridge, John B., 4,584,291, Cl. 514-210.000.
Beeman, Robert H.; and Lind, Paul U., to GTE Communication Systems Corporation. Transmission response measurement. 4,584,696, Cl. 375-99.000.
Beeson, Charles F.: *See—*
Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., 4,584,511, Cl. 318-600.000.
Behrens, Robert N. Apparatus for squeezing off and rerounding pipe. 4,583,390, Cl. 72-416.000.
Beier, Sybille: *See—*
Nickish, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; Beier, Sybille; and Elger, Walter, 4,584,288, Cl. 514-172.000.
Beierwaltes, William H.: *See—*
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Belknap, Lewis J. Safety electrical receptacle cover plate. 4,584,430, Cl. 174-67.000.
Bell Telephone Laboratories, Inc.: *See—*
Karlin, David B.; Patel, Chandra K. N.; Wood, Obert R., II; Bridges, Thomas J.; and Strnad, Albert R., 4,583,539, Cl. 128-303.100.
Bello, Ernesto; and Mibelli, Joseph F., to Watsco, Inc. Electrical load protection device. 4,584,623, Cl. 361-90.000.
Beloit Corporation: *See—*
Arav, Ronnie A., 4,583,567, Cl. 137-115.000.
Ocker, Jerold R.; and Crouse, Jere W., 4,583,966, Cl. 493-374.000.
Belot, Gerard: *See—*
Lessard, Jean; and Belot, Gerard, 4,584,069, Cl. 204-74.000.
Belvederi, Bruno: *See—*
Mattei, Riccardo; and Belvederi, Bruno, 4,583,557, Cl. 131-84.100.
Belwith International, Ltd.: *See—*
Sjogren, C. Norman, 4,583,381, Cl. 70-95.000.
Bemis, Richard A.: *See—*
Hutchins, Clinton E.; Rougeau, Derek E.; Chalmers, Thomas E.; and Bemis, Richard A., 4,584,067, Cl. 204-33.000.
Ben-Gurion University of the Negev Research and Development Authority: *See—*
Elperin, Freda; and Tamir, Abraham, 4,583,941, Cl. 431-347.000.
Bengt Lundin AB: *See—*
Kramming, Erik, 4,583,349, Cl. 53-459.000.
Benkowitz, Lothar: *See—*
Hornung, Walter; Hametner, Gerhard; Ackermann, Wolfgang; Benkowitz, Lothar; Hofmann, Peter; Koch, Dieter; and Hemming, Herbert, 4,583,756, Cl. 280-432.000.
Berg, Lloyd; and Warren, Karl J. Separation of acetone from methanol by extractive distillation. 4,584,063, Cl. 203-51.000.
Bergemann GmbH: *See—*
Albers, Karl; and Schwade, Hans, 4,583,496, Cl. 122-379.000.
Berger, James K.: *See—*
Nay, Daniel L.; and Berger, James K., 4,584,619, Cl. 360-75.000.
Berger, Per. Rescue basket. 4,583,617, Cl. 182-142.000.
Bergische Achsenfabrik Fr. Kotz & Sohne: *See—*
Ebbinghaus, Wilfried; Henze, Erwin; and Gross, Wilhelm, 4,583,622, Cl. 188-79.50K.
Berman, Carol B.: *See—*
Talley, John J.; and Berman, Carol B., 4,584,332, Cl. 524-122.000.
Bernard, Alain M.; and Sacleux, Bernard, to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.). Electrostatic accelerometer. 4,583,404, Cl. 73-517.00B.
Bernardson, Peter S., to GTE Communication Systems Corporation. Method of residue to analog conversion. 4,584,561, Cl. 340-347.0DA.
Bernardson, Peter S., to GTE Communication Systems Corporation. Method of residue to analog conversion. 4,584,562, Cl. 340-347.0DD.
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Bernardson, Peter S., to GTE Communication Systems Corporation. Residue to analog converter. 4,584,564, Cl. 340-347.0DA.
Bernauer, Otto; and Wagner, Robert, to Daimler-Benz Aktiengesellschaft. Pressure-tight vessel for the storage of hydrogen in a metal matrix body. 4,583,638, Cl. 206-0.700.
Bernstein, Philip: *See—*
Smith, Gaylord D.; Brown, Douglas S.; Bernstein, Philip; and Weller, John E., 4,584,392, Cl. 556-137.000.
Bertus, Brent J.; Mark, H. Wayne; and McKay, Dwight L., to Phillips Petroleum Company. Cracking catalyst restoration with aluminum compounds. 4,584,283, Cl. 502-31.000.
Bethlehem Steel Corporation: *See—*
Steele, James E., 4,583,881, Cl. 405-198.000.
Betti, Osvaldo O.: *See—*
Derechinsky, Victor E.; and Betti, Osvaldo O., 4,583,537, Cl. 128-303.00B.
Beukeboom, Martinus T.: *See—*
Timmer, Bernhard H.; van der Hoef, Willem A.; and Beukeboom, Martinus T., 4,583,635, Cl. 198-382.000.
Beurer, Robert J.: *See—*
Krauss, Timothy A.; Roman, Stephan; and Beurer, Robert J., 4,583,704, Cl. 244-17.110.
Bezier, Jean: *See—*
Franzolini, Marc; Maria, Edmond; Vanderschaeghe, Alain; and Bezier, Jean, 4,583,588, Cl. 165-173.000.
Bhattacharyya, Anjan: *See—*
Chen, Teh-Yi J.; Bhattacharyya, Anjan; Stacy, William T.; Vorst, Charles J.; and Schmitz, Albert, 4,584,205, Cl. 427-93.000.
Biasutti, Luciano: *See—*
Colombotto, Amedeo; Della Sala, Ernesto; and Biasutti, Luciano, 4,584,476, Cl. 250-338.000.
Bibb, Henry Q.; Merker, David E.; and Stark, Louis E., to Babcock & Wilcox Company, The. Explosive welding device. 4,583,672, Cl. 228-2.500.
BICC public limited company: *See—*
White, Cyril J.; and Joyce, Christopher, 4,583,801, Cl. 339-17.00C.
Bichot, Bernard; Lemaignen, Henri; and Louis, Bernard, to Isover Saint-Gobain. Controlled compression winding method and apparatus. 4,583,697, Cl. 242-55.100.
Biddick, Karen M.: *See—*
Gen, Tamar G.; Biddick, Karen M.; and Hansen, Erling, 4,584,238, Cl. 428-349.000.
Bielawa, Robert J.: *See—*
Hines, Marion E.; Bielawa, Robert J.; and Geoffroy, Robert O., 4,583,556, Cl. 128-804.000.
Bill Checker Co., Ltd.: *See—*
Aoyama, Shuji, 4,584,529, Cl. 324-261.000.

Bio-Stimu Trend Corp.: *See*—
Granek, Herman; Granek, Murry; and Church, John, 4,583,547, Cl. 128-639.000.
Biogal Gyogyszergyar: *See*—
Balint, Janos; Cseke, Laszlo ; Fabian, Ferenc; Kun, Lajos; and Szarvas, Miklos, 4,584,135, Cl. 260-351.600.
Biolectron, Inc.: *See*—
Montalbano, Anthony P.; and Conroy, David E., 4,583,550, Cl. 128-644.000.
Biophysica Foundation: *See*—
Sovak, Milos; and Ranganathan, Ramachandran, 4,584,401, Cl. 564-153.000.
Bird, John M.: *See*—
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Biro, Carl: *See*—
Humphrey, Robert; and Biro, Carl, 4,583,973, Cl. 604-135.000.
Bisbing, Robert H., to Southco, Inc. Latch assembly having pull-up action. 4,583,775, Cl. 292-64.000.
Bishop, Burton D., to Dresser Industries, Inc. Vehicle hoist. 4,583,620, Cl. 187-8.750.
Bissot, Thomas C., to Du Pont de Nemours, E. I., and Company. Process for electrolysis of brine with iodide impurities. 4,584,071, Cl. 204-98.000.
Bittler, Dieter: *See*—
Nickish, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; Beier, Sybille; and Elger, Walter, 4,584,288, Cl. 514-172.000.
Bivins, William F.; and Allison, Clifford, to Radiation Systems, Inc. Antenna having a rapid engagement pivot joint between the antenna reflector and support structure. 4,584,589, Cl. 343-882.000.
Black & Decker Inc.: *See*—
Smith, Somers H., III, 4,583,600, Cl. 173-124.000.
Blackmon, Kenneth P.: *See*—
McCormick, Charles L.; and Blackmon, Kenneth P., 4,584,358, Cl. 526-240.000.
Blair, Steven M. Flash reducing muzzle brake. 4,583,445, Cl. 89-14.200.
Blake, William W., to Caterpillar Tractor Co. Fluid system with selective differential pressure control. 4,583,624, Cl. 192-3.220.
Blanchard, Robert R., to Dow Chemical Company, The. Chlorosulfonation of chlorinated polyethylene. 4,584,351, Cl. 525-344.000.
Blaschke, Gunter; May, Adolf; Bucking, Hans-Walter; and Wallhausser, Karl H., to Hoechst Akteingesellschaft. Amphoteric compounds, mixtures containing these compounds for disinfectant cleaning, and processes for the preparation of these compounds and mixtures. 4,584,121, Cl. 252-106.000.
Blatter, Albrecht, to W. Schneeberger Maschinenfabrik AG. Recirculating linear roller bearing. 4,583,793, Cl. 308-6.00C.
Blattmann, Lee D., to Tamille Pty. Limited. Gear box. 4,583,427, Cl. 74-760.000.
Blaupunkt-Werke GmbH: *See*—
Eilers, Norbert; and Bragas, Peter, 4,584,708, Cl. 455-45.000.
Blazowich, Daniel L. Rotatable electrical connector. 4,583,798, Cl. 339-8.00P.
Blewett, Charles W.; and Turner, Stephen W., to National Distillers and Chemical Corporation. Process for separating fatty materials from supported nickel catalysts. 4,584,140, Cl. 260-412.800.
Blizzard, John D.; and Narula, Dipak, to Dow Corning Corporation. Silicone pressure-sensitive adhesive process and product with improved lap-shear stability-I. 4,584,355, Cl. 525-477.000.
Block, Detlef: *See*—
Mohring, Gunter; and Block, Detlef, 4,584,588, Cl. 343-786.000.
Block Drug Co., Inc.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,584,319, Cl. 514-547.000.
Block, Jacob, to W. R. Grace & Co. Dispersible alpha alumina monohydrate having increased viscosifying properties. 4,584,108, Cl. 252-8.50B.
Bloomer, Milton D.: *See*—
Harnden, John D., Jr.; Rocha, Henry A. F.; and Bloomer, Milton D., 4,584,525, Cl. 324-126.000.
Blumle, Martin, to Winkler+Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. Vacuum control device. 4,583,729, Cl. 271-276.000.
Blythe, James E.; Wiseman, Peter F.; and Carr, Daniel G., to Mobil Oil Corporation. Dispenser package for a collection of inter-connected severable sheet material and method of dispensing. 4,583,642, Cl. 206-390.000.
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Weigel, Paul H., 4,584,402, Cl. 564-154.000.
BOC Group, Inc., The: *See*—
Huang, Bao-Shan; Terrell, Ross C.; Deutsche, Kirsten H.; Kudzma, Linas V.; and Lalinde, Nhora L., 4,584,303, Cl. 514-326.000.
Bocquet, Jacques R.; Goldhaber, Richard P.; Kersten, Jean; Mathias, Jean-Marie; and Pearson, Stephen, to Travenol European Research and Development Centre (TERADEC). Closed drug delivery system. 4,583,971, Cl. 604-82.000.
Bodary, Michael: *See*—
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Boden, Richard M.: *See*—
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Frey, Luthur R., 4,583,935, Cl. 425-384.000.
Lubowitz, Hyman R.; and Sheppard, Clyde H., 4,584,364, Cl. 528-128.000.
Quynn, Allen G., 4,584,486, Cl. 290-44.000.
Boenning, Charles B.; and Moorman, Charles J., to Claiborne Electronics, Inc. Door-mounted combination intercom and viewer. 4,584,436, Cl. 179-37.000.
Bogart, John D.; and Hawk, Charles W. Process for the biological degradation of hazardous waste by-products. 4,584,102, Cl. 210-610.000.
Boliden Aktiebolag: *See*—
Lindquist, Bjorn K. V.; and Petersson, Stig A., 4,584,017, Cl. 75-77.000.
Boling, Norman L.: *See*—
Mayer, Thomas; Boling, Norman L.; and Rancourt, James D., 4,584,259, Cl. 430-273.000.
Bonatz, Hartmut: *See*—
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Bondarev, Ivan M.: *See*—
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Bonerb, Timothy C., to Bonerb, Vincent C., a part interest. Valve assembly and automatic control system for material handling and storage bin. 4,583,663, Cl. 222-61.000.
Bonerb, Vincent C.: *See*—
Bonerb, Timothy C., 4,583,663, Cl. 222-61.000.
Bonicel, Jean P.: *See*—
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Bonomelli S.p.A.: *See*—
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Boomer, John L.: *See*—
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Borchert, Alfred E.: *See*—
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Borden, Inc.: *See*—
Boston, Louis R., 4,584,201, Cl. 426-106.000.
Borgman, Bradley N.; Cramer, Jerry W.; and Dossey, Don E., to Sunkist Growers, Inc. Vacuum apparatus for transferring round food articles. 4,583,910, Cl. 414-752.000.
Bortolin, Peter. Hose coupling. 4,583,769, Cl. 285-73.000.
Bosco, Deborah: *See*—
Bosco, Joseph; and Bosco, Deborah, 4,583,383, Cl. 70-408.000.
Bosco, Joseph; and Bosco, Deborah. Key-turning device. 4,583,383, Cl. 70-408.000.
Boston, Louis R., to Borden, Inc. Resealable package, method of making and use. 4,584,201, Cl. 426-106.000.
Bottitta, Joseph: *See*—
Fishman, A. Harry; and Bottitta, Joseph, 4,583,667, Cl. 222-142.600.
Bouchard, Donald J. Double purpose security plate. 4,583,776, Cl. 292-346.000.
Boudy, Francois, to General Foods France. Apparatus to evaluate bubble formation. 4,583,408, Cl. 73-840.000.
Bourelier, Claude; Daude, Gerard; and Orain, Roger, to Saint-Gobain Vitrage. Glazing article. 4,584,229, Cl. 428-216.000.
Bourns, Inc.: *See*—
Tainter, Leland B., Jr.; Goeppinger, Edward J.; King, William H.; and Smith, Ronald E., 4,583,806, Cl. 339-75.0MP.
Bowman, James M., to B. Quad, Inc. Sectional rack for caps and the like. 4,583,646, Cl. 211-32.000.
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Hunt, Trevor M.; and Bowns, Desmond E., 4,583,396, Cl. 73-61.00R.
Bowsky, Benjamin; Honkomp, Glenn A.; and Burrows, Larry G., to Emerson Electric Co. Hermetic terminal assembly. 4,584,433, Cl. 174-152.0GM.
Boyd, Winnett. Pedal crank and chain wheel assembly for bicycles. 4,583,422, Cl. 74-594.200.
Boyd, Zane R. Hemorrhoidal pessary. 4,583,542, Cl. 128-341.000.
Bragas, Peter: *See*—
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Brandes, Wilhelm: *See*—
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Holmwood, Graham; Lurssen, Klaus; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,584,373, Cl. 544-225.000.
Braun, David L., to Minnesota Mining and Manufacturing Company. Multiple fluid pathway energy converter. 4,583,911, Cl. 415-116.000.
Brauns, Frank; Walters, Charles S.; and Stuff, Thomas W., to Novatronics, Inc. Programmable interference blanking system. 4,584,578, Cl. 343-5.00R.
Bre, Anne; Mollard, Marc; and Osgan, Maseh, to Institut Francais du Petrole. Polyvinylidene fluoride compositions of improved flexibility and their use, particularly in the manufacture of flexible tubes. 4,584,215, Cl. 428-36.000.
Breitbach, Elmar, to Deutsche Forschungs -und Versuchsanstalt fur Luft -und Raumfahrt e.V. Spring-system for motor vehicles. 4,583,752, Cl. 280-6.00R.
Bresson, Clarence R.: *See*—
Parlman, Robert M.; Young, Tommy L.; and Bresson, Clarence R., 4,584,118, Cl. 252-61.000.

Brethorst, David L.: *See*—
Huang, Min-Nan; and Brethorst, David L., 4,583,454, Cl. 99-468.000.

Breuer, Oswald; Merten, Gerhard; Steinkuhl, Bernd; and Rassmann, Christoph, to Gewerkschaft Eisenhutte Westfalia. Mineral winning plough. 4,583,785, Cl. 299-34.000.

Brevetti Gaggia S.p.A.: *See*—
Pandolfi, Alberto, 4,583,863, Cl. 366-149.000.

Bricker, Michael W., to AMP Incorporated. Supercentering workpiece holder. 4,583,432, Cl. 82-1.00C.

Brickwedde, Richard. Combination cigarette lighter and perfume dispenser. 4,583,939, Cl. 431-253.000.

Bridges, Edward W.; and Winterford, Charles R., to Cincinnati Milacron Inc. Welding torch cleaner for robotic welding. 4,583,257, Cl. 15-93.00R.

Bridges, Thomas J.: *See*—
Karlin, David B.; Patel, Chandra K. N.; Wood, Obert R., II; Bridges, Thomas J.; and Strnad, Albert R., 4,583,539, Cl. 128-303.100.

Bridgestone Corporation: *See*—
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Bridgestone Tire Company Limited: *See*—
Kumagai, Yuzo; and Ogawa, Yuichiro, 4,584,050, Cl. 156-406.200.

Briggs, James B., to Mettler Electronics Corporation. High efficiency high frequency power oscillator. 4,583,529, Cl. 128-24.00A.

Briles, Franklin S. Annular dovetail head fastener. 4,583,897, Cl. 411-378.000.

Bringuel, Martin C., to Tandem Computers Incorporated. Electric module with fail-safe power disconnect. 4,583,803, Cl. 339-45.00M.

Brinkmann, Ulrich, to Metallwarenfabrik Twick & Lehrke KG. Mirror or mirrored cabinet. 4,584,632, Cl. 362-133.000.

Brisciano, Andrew. Championship track and field game. 4,583,741, Cl. 273-244.000.

British-American Tobacco Company Limited: *See*—
Hedge, Roger W., 4,583,559, Cl. 131-304.000.
Luke, John A., 4,583,558, Cl. 131-284.000.

British Railways Board: *See*—
Harwood, Neil A., 4,583,464, Cl. 105-171.000.

British Telecommunications: *See*—
Garrett, Ian, 4,584,720, Cl. 455-608.000.

Brois, Stanley J.: *See*—
Gutierrez, Antonio; Brownawell, Darrell W.; Walker, Thad O.; and Brois, Stanley J., 4,584,386, Cl. 548-237.000.

Broken Hill Proprietary Company Limited, The: *See*—
Robb, Dennis M.; and Wilson, Peter K., 4,583,685, Cl. 238-54.000.

Brookes & Gatehouse Limited: *See*—
Temple, Andrew W., 4,584,577, Cl. 340-870.320.

Brooks, Edward F., to TRW Inc. Fluidization aid for cohesive materials. 4,583,299, Cl. 34-10.000.

Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., to Imperial Chemical Industries PLC. Triazinones. 4,584,298, Cl. 514-242.000.

Brown, Douglas S.: *See*—
Smith, Gaylord D.; Brown, Douglas S.; Bernstein, Philip; and Weller, John E., 4,584,392, Cl. 556-137.000.

Brown, Ian J.; and Bird, John M., to Union Camp Corporation. Magnet system. 4,584,549, Cl. 335-301.000.

Brown, Jack H.: *See*—
Shelangoskie, Donald R.; Brown, Jack H.; Jacobsen, Eric K.; Masterson, Patrick A.; Pierce, Ricky A.; Rogers, Barry A.; and Valentine, Lawrence J., 4,583,336, Cl. 52-250.000.

Brown, John A. S., to Hills Industries Limited. Line lock. 4,583,649, Cl. 211-183.000.

Brown, Lawrence E.: *See*—
Wieland, Donald M.; Brown, Lawrence E.; Beierwaltes, William H.; and Wu, Jiann-long, 4,584,187, Cl. 424-1.100.

Brown, M. Sue: *See*—
Brown, Rolien E.; and Brown, M. Sue, 4,583,795, Cl. 312-209.000.

Brown, Rolien E.; and Brown, M. Sue. Crash cart for use in a hospital and the like. 4,583,795, Cl. 312-209.000.

Brown, Thomas L., to Shell Oil Company. 2-pyridinylmethyl oxyiminocyclopropanecarboxylates as pesticides. 4,584,304, Cl. 514-351.000.

Brown, William W., Jr.; Curry, Wayne J.; Dahlke, Gerhard P.; Lupul, Francis T.; and Totta, Paul A., to International Business Machines Corporation. Variable axis rotary drive vacuum deposition system. 4,583,488, Cl. 118-500.000.

Brown & Williamson Tobacco Corporation: *See*—
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Brownawell, Darrell W.: *See*—
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Bruchmann, Heinz D.: *See*—
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Bruckert, Eugene J.; Butcher, James S.; and Kneisel, Thomas F., to Motorola, Inc. Signal quality steered diversity. 4,584,713, Cl. 455-277.000.

Brugmans, Josephus; Pollack, William; Janssen, Paul A. J.; and Tripodi, Daniel, to Janssen Pharmaceutica N.V. Aiding the regression of neoplastic disease with 2,3,5,6-tetrahydro-6-phenylimidazo[2,1-b]thiazole. 4,584,305, Cl. 514-368.000.

Brunner, Hans-Georg, to Ciba-Geigy Corporation. Cyclohexanedionecarboxylic acid derivatives with herbicidal and plant growth regulating properties. 4,584,013, Cl. 71-94.000.

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Hundertmark, James M., 4,583,500, Cl. 123-73.0AD.
McCormick, Daniel F., 4,583,628, Cl. 192-76.000.

Brush, Robert W., Sr.: *See*—
Werth, Dee A.; Brush, Robert W., Sr.; and Pressel, Paul I., 4,583,809, Cl. 339-143.00R.

Brustle, Klaus: *See*—
Rock, Erich; and Brustle, Klaus, 4,583,261, Cl. 16-238.000.

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Buchel, Karl H.: *See*—
Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; Reinecke, Paul; and Rosslenbroich, Hans-Jurgen, 4,584,308, Cl. 514-383.000.

Buck, Donald C. Container attachment. 4,583,666, Cl. 222-109.000.

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Rogers, Chester D., 4,583,992, Cl. 48-76.000.

Bucking, Hans-Walter: *See*—
Blaschke, Gunter; May, Adolf; Bucking, Hans-Walter; and Wallhausser, Karl H., 4,584,121, Cl. 252-106.000.

Budd Company, The: *See*—
Corrigan, James I.; and Lunova, Casper P., 4,583,280, Cl. 29-563.000.

Buder, Wolfgang: *See*—
Panster, Peter; Michel, Rudolf; Buder, Wolfgang; and Kleinschmit, Peter, 4,584,395, Cl. 556-479.000.

Buffington, Jesse D.; and Young, Bruce, III. Angularly adjustable shelf and support. 4,583,648, Cl. 211-90.000.

Burchenal, Joseph H.: *See*—
Klein, Robert S.; Lim, Muill; Ren, Wuyun; and Burchenal, Joseph H., 4,584,369, Cl. 536-54.000.

Burckhardt, Urs, to Ciba-Geigy Corporation. Lactone derivative, process for the preparation thereof, and use thereof in pest control. 4,584,314, Cl. 514-450.000.

Burelsmith, Emmitt B. Livestock feed product and method and apparatus for manufacturing same. 4,584,200, Cl. 426-69.000.

Burgher, Peter H.; and Boomer, John L., to Marelco Power Systems. Transformer having bow loop in tubular winding. 4,584,551, Cl. 336-61.000.

Burgman, Herbert A.: *See*—
Chiang, Peter T.; Lahoda, Edward J.; and Burgman, Herbert A., 4,584,183, Cl. 423-2.000.
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Leach, Jack, 4,584,152, Cl. 264-103.000.

Burman, Orvar B.: *See*—
Leskovec, Robert A.; Davenport, John M.; and Burman, Orvar B., 4,584,499, Cl. 310-318.000.

Burrage, Lawrence M.: *See*—
Raketti, Raymond; Schreiber, Daniel; Orgovan, Andrew J.; Adair, George E.; and Burrage, Lawrence M., 4,584,429, Cl. 174-18.000.

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Mayer, Thomas; Boling, Norman L.; and Rancourt, James D., 4,584,259, Cl. 430-273.000.
Pugh, Michael W., 4,584,537, Cl. 331-1.00A.

Burrows, James L., to Sanders Associates, Inc. Sorting apparatus. 4,584,664, Cl. 364-900.000.

Burrows, Larry G.: *See*—
Bowsky, Benjamin; Honkomp, Glenn A.; and Burrows, Larry G., 4,584,433, Cl. 174-152.0GM.

Burton, R. Edward. Sewage sludge filtering system. 4,584,099, Cl. 210-203.000.

Bush, Eric L.: *See*—
Sterling, Henley F.; Bush, Eric L.; and Alexander, John H., 4,584,074, Cl. 204-181.100.

Bush, Hubert E.: *See*—
Mason, Bobby L.; and Bush, Hubert E., 4,584,460, Cl. 219-150.00V.

Butcher, James S.: *See*—
Bruckert, Eugene J.; Butcher, James S.; and Kneisel, Thomas F., 4,584,713, Cl. 455-277.000.

Butler, Delica M. Simulated thatched roofing. 4,583,344, Cl. 52-750.000.

Butler, Donald E.; and Thomas, Anthony J., to Warner-Lambert Company. (Substituted-phenyl)-5-oxo-2-pyrrolidinepropanoic acids and esters thereof, and use for reversing electroconvulsive shock-induced amnesia. 4,584,313, Cl. 514-424.000.

Butman, Thomas R., Jr.; and Schmitt, Nickolas, deceased (by Schmitt, Marjorie, executrix), to General Electric Company. Beam support for bar windings of large electric generator. 4,584,497, Cl. 310-214.000.

Butner, Cyrus L., to United States of America, National Aeronautics and Space Administration. Optical multiple sample vacuum integrating sphere. 4,583,860, Cl. 356-446.000.

Buzak, Thomas S., to Tektronix, Inc. Electro-optic display system with improved viewing angle. 4,583,825, Cl. 350-335.000.

Byrd, Carl E.: *See*—
Beaver, R. Neal; Alexander, Lloyd E.; and Byrd, Carl E., 4,584,085, Cl. 204-290.00R.

Byrne & Davidson Doors (N.S.W.) Pty. Limited: *See*—
Whitehouse, Martin H.; and Combs, Robert L., 4,583,706, Cl. 248-251.000.

Bytzek, Klaus K.; and Komorowski, Jacek S., to Litens Automotive Inc. Timing belt tensioner with damped constant spring tensioning and belt tooth disegagement prevention. 4,583,962, Cl. 474-133.000.

C. Hager & Sons Hinge Manufacturing Company: *See*—
Werner, Fred C., 4,583,262, Cl. 16-300.000.
C.L.M. Cooperatieve: *See*—
Locker, Jan A. K., 4,583,415, Cl. 74-207.000.
C. R. Bard, Inc.: *See*—
Schmid, Walter, 4,583,548, Cl. 128-639.000.
Cablecraft, Inc.: *See*—
Hurlow, Robert H., 4,583,417, Cl. 74-473.00R.
Cafag AG: *See*—
Rost, Kurt; and Casty, Ueli, 4,583,450, Cl. 99-279.000.
Cafiero, Luca; Mazzola, Mario; and Prati, Massimo, to D.A.V.I.D. Systems, Inc. Alternate Mark Invert (AMI) transceiver with switchable detection and digital precompensation. 4,584,690, Cl. 375-18.000.
Camco, Incorporated: *See*—
Davis, Jonathan P., 4,583,596, Cl. 166-332.000.
Camp, Dariel R. Tile setting kit. 4,583,343, Cl. 52-749.000.
Campagnolo S.P.A.: *See*—
Michelotti, Guido, 4,583,787, Cl. 301-58.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Anantaraman, Ayilam V., 4,583,395, Cl. 73-55.000.
Canfield, Cammy: *See*—
Canfield, Charles L., 4,583,577, Cl. 150-52.00R.
Canfield, Charles L., to Canfield, Pat; Canfield, Cindy; and Canfield, Cammy. Container insulator. 4,583,577, Cl. 150-52.00R.
Canfield, Cindy: *See*—
Canfield, Charles L., 4,583,577, Cl. 150-52.00R.
Canfield, Pat: *See*—
Canfield, Charles L., 4,583,577, Cl. 150-52.00R.
Canon Kabushiki Kaisha: *See*—
Kan, Fumitaka; Tajima, Hatsuo; Hosoi, Atsushi; Takenouchi, Masanori; and Saito, Takashi, 4,583,490, Cl. 118-658.000.
Kasamura, Toshirou; and Yoshida, Yasumi, 4,583,832, Cl. 355-3.0DD.
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; and Hosoe, Kazuya, 4,584,656, Cl. 364-569.000.
Suzuki, Koji, 4,583,839, Cl. 355-14.00R.
Yabu, Syuichi; and Sato, Hiroshi, 4,583,840, Cl. 355-30.000.
Cantella, Michael J.: *See*—
Klein, John J.; and Cantella, Michael J., 4,584,609, Cl. 358-213.000.
Cantu-Hernandez, Francisco: *See*—
Becerra-Novoa, Jorge O.; Cantu-Hernandez, Francisco; and Martinez-Vera, Enrique R., 4,584,016, Cl. 75-35.000.
Carder, Charles R.: *See*—
Komanduri, Ranga; and Carder, Charles R., 4,584,649, Cl. 364-475.000.
Carelli, Mario D., to Westinghouse Electric Corp. Blanket management method for liquid metal fast breeder reactors. 4,584,167, Cl. 376-267.000.
Carey, John L., Jr.; and Elias, Jack, to Honeywell Inc. Process controller with power outage analysis capability. 4,584,651, Cl. 364-483.000.
Carey, Michael: *See*—
Edwards, Joseph H.; and Carey, Michael, 4,583,248, Cl. 2-164.000.
Carl-Zeiss-Stiftung: *See*—
Meier, Hans-Jurgen, 4,583,829, Cl. 350-609.000.
Carle, Jean C.: *See*—
Choquenet, Pierre; and Carle, Jean C., 4,584,100, Cl. 210-225.000.
Carlson, David E.: *See*—
Pankove, Jacques I.; and Carlson, David E., 4,584,028, Cl. 148-1.500.
Carlstedt, Hans, to AB Volvo. Safety belt for motor vehicles. 4,583,762, Cl. 280-801.000.
Carr, Daniel G.: *See*—
Blythe, James E.; Wiseman, Peter F.; and Carr, Daniel G., 4,583,642, Cl. 206-390.000.
Carroll, Roger W. Flue cleaner and mounting attachment. 4,583,258, Cl. 15-249.000.
Carter, Gary M.: *See*—
Chen, Yung-Jui; Carter, Gary M.; and McNeill, William H., 4,583,818, Cl. 350-96.190.
Carter, George L. Cartridge dispenser. 4,583,659, Cl. 221-279.000.
Carter, Nicholas J. R.; Middleton, Francisco A.; and Das, Santanu, to ITT Corporation. Use of a tone bus to provide polling and data distribution apparatus for communication system terminal groups. 4,584,680, Cl. 370-96.000.
Casco Products Corporation: *See*—
Horwitt, Laurence G., 4,583,277, Cl. 29-456.000.
Cassidy, Lawrence W.; and Everhart, Douglas R., to Perkin-Elmer Corporation, The. Attitude transfer system. 4,583,852, Cl. 356-152.000.
Casteel, Carroll: *See*—
Hulseweh, Terry S.; and Casteel, Carroll, 4,583,282, Cl. 29-576.00W.
Castelijn & Beerens Lederwaren B.V.: *See*—
Smit, Johannes W. M.; and Spoorenberg, Gerard J. A., 4,584,571, Cl. 340-572.000.
Casty, Ueli: *See*—
Rost, Kurt; and Casty, Ueli, 4,583,450, Cl. 99-279.000.
Caterpillar Industrial Inc.: *See*—
Wiblin, Wayne T.; Surma, Ronald D.; and Melocik, Grant C., 4,584,472, Cl. 250-237.00G.
Caterpillar Tractor Co.: *See*—
Blake, William W., 4,583,624, Cl. 192-3.220.
Causin, Elmar: *See*—
Nagel, Dieter; Gotz, Bernhard; Causin, Elmar; and Schroder, Werner-Georg, 4,583,761, Cl. 280-781.000.
Cefelin, Pavel: *See*—
Hudecek, Slavko; Hudeckova, Ivana; and Cefelin, Pavel, 4,584,354, Cl. 525-454.000.
Ceintrey, Claude; and Crochemore, Michel, to Rhone-Poulenc Systemes. Diazotype materials which can be developed by heat and contain an activator precursor having 2-carboxy carboxamide group releasing a strong base during heating. 4,584,256, Cl. 430-159.000.
Celanese Corporation: *See*—
Foley, Paul, 4,584,144, Cl. 558-250.000.
Celotex Corporation, The: *See*—
Miller, John A., 4,583,486, Cl. 118-308.000.
Centre Electronique Horloger S.A.: *See*—
Perret, Andre ; and Vuilleumier, Raymond, 4,584,056, Cl. 156-630.000.
Centre National de la Recherche Scientifique: *See*—
Chive, Maurice; Constant, Eugene; Leroy, Yves; Mamouni, Ahmed; Robillard, Michele; and Van de Velde, Jean-Claude, 4,583,869, Cl. 374-122.000.
Ceriani, Roberto L.; and Peterson, Jerry A. Method and compositions for carcinoma diagnosis. 4,584,268, Cl. 435-7.000.
Cerny, Daryl D., to Ball Corporation. Crosshead with longitudinal and transverse shear mixers. 4,584,154, Cl. 264-209.200.
Ceskoslovenska Akademie Ved: *See*—
Wichterle, Otto, 4,583,830, Cl. 351-212.000.
Ceskoslovenska Akademie Ved of Prague: *See*—
Hudecek, Slavko; Hudeckova, Ivana; and Cefelin, Pavel, 4,584,354, Cl. 525-454.000.
CGR Ultrasonic: *See*—
Lannuzel, Olivier; and Pradal, Thierry, 4,583,409, Cl. 73-861.250.
Chabala, Leonard V.; and Lin, Chester H., to S&C Electric Company. Sealing arrangement. 4,583,750, Cl. 277-168.000.
Chakraborty, Sujit: *See*—
Wilson, Patricia A.; Stackhouse, Kenneth B.; Chakraborty, Sujit; Ching, Walter S.; Hill, William D.; Knepp, John B.; Ward, James P.; and Zediker, Warren L., 4,584,165, Cl. 376-216.000.
Chalmers, Thomas E.: *See*—
Hutchins, Clinton E.; Rougeau, Derek E.; Chalmers, Thomas E.; and Bemis, Richard A., 4,584,067, Cl. 204-33.000.
Chamberlin, John M.; Chilvers, Edward W., Jr.; Nunning, Walter J.; and Southern, John H., to Monsanto Company. Partially oriented nylon yarn and process. 4,583,357, Cl. 57-243.000.
Chan, Luen C.; and Snyder, Franklin B., to Harris Corporation. System for correlation and recognition of terrain elevation. 4,584,646, Cl. 364-449.000.
Chan, Steven S., to Ampex Corporation. Ratio comparator for digital signals. 4,584,556, Cl. 340-146.200.
Chance, Christopher P.; Coble, Ralph P., Jr.; Ingle, Edwin C.; and Jones, Joye A., to AT&T Bell Laboratories. Bidirectional adaptive voice frequency repeater. 4,584,441, Cl. 179-170.200.
Chant, Bernard J.: *See*—
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,584,128, Cl. 252-522.00R.
Chapman, John L., Jr.; La Valle, Thomas A.; and Nelson, Peter S., to AT&T Technologies, Inc. Methods of assembling electrical protective devices. 4,583,954, Cl. 445-7.000.
Chapuis, Claude: *See*—
Pardeau, Benoit H.; Chapuis, Claude; and Austruy, Georges, 4,583,938, Cl. 431-79.000.
Charles Stark Draper Laboratory, Inc., The: *See*—
Grossman, Arthur, 4,583,582, Cl. 165-32.000.
Chasar, Dwight W., to B. F. Goodrich Company, The. Tetrakis(2,6-di-t-butyl-4-substituted phenyl)4,4'-bisphenyl diphosphites. 4,584,146, Cl. 558-156.000.
Chassagnette, Clement; and Quemerais, Philippe, to Renault Vehicules Industriels. Continuous torque transmission with manual transmission and converter. 4,583,426, Cl. 74-733.000.
Chatterjee, Bivabasu; and Wilson, Frank G., to Engelhard Corporation. Method of making self-supporting electrode for sea-water batteries. 4,583,285, Cl. 29-623.500.
Chemische Fabrik Grunau GmbH: *See*—
Eiermann, Horst W., 4,584,214, Cl. 428-35.000.
Chen, Nai Y., to Mobil Oil Corporation. Process for the production of carbon monoxide and hydrogen from carbonaceous material. 4,583,993, Cl. 48-197.00R.
Chen, Otis Y.: *See*—
Field, Thomas T.; Chen, Otis Y.; Geary, Arthur R.; Salkeld, Richard W.; and Ulion, Nicholas E., 4,583,608, Cl. 148-1.000.
Chen, Teh-Yi J.; Bhattacharyya, Anjan; Stacy, William T.; Vorst, Charles J.; and Schmitz, Albert, to Signetics Corporation. Method for growing an oxide layer on a silicon surface. 4,584,205, Cl. 427-93.000.
Chen, Yung-Jui; Carter, Gary M.; and McNeill, William H., to GTE Laboratories Incorporated. Optical device with surface plasmons. 4,583,818, Cl. 350-96.190.
Cheong, S. L.: *See*—
Pena, Edward; and Cheong, S. L., 4,583,676, Cl. 228-179.000.
Cherny, Alexandr N.: *See*—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Ertli, Alisa A.; Marina, Semen I.; Avxentiev, Anatoly G.; Lepetchenko, Stanislav N.; and Serzhantu, Ivan P., 4,583,977, Cl. 604-174.000.
Cherpeck, Richard E., to Chevron Research Company. Aldol adducts containing triazole groups. 4,584,008, Cl. 71-76.000.
Chevassus-More, Alain R.: *See*—
Czernichow, Jean A.; and Chevassus-More, Alain R., 4,583,595, Cl. 166-264.000.

Chevron Research Company: *See*—
Cherpeck, Richard E., 4,584,008, Cl. 71-76.000.
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Goodrich, Judson E., 4,584,023, Cl. 106-273.00R.
King, William F., 4,584,317, Cl. 514-493.000.
Meader, Arthur L., Jr., 4,584,233, Cl. 428-290.000.
Nacamuli, Gerald J.; and Hickson, Donald A., 4,584,423, Cl. 585-481.000.
Parker, Phillip H., 4,584,335, Cl. 525-177.000.
Wollenberg, Robert H., 4,584,117, Cl. 252-51.50A.

Chi, Frank K., to Dow Corning Corporation. Phenolic resin-containing aqueous compositions. 4,584,340, Cl. 524-596.000.

Chia, E. Henry; and Adams, Ronald D., to Southwire Company. Method of hot-forming metals prone to crack during rolling. 4,584,029, Cl. 148-2.000.

Chiang, David: *See*—
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Chiang, Peter T.; Lahoda, Edward J.; and Burgman, Herbert A., to Westinghouse Electric Corp. Process for separating zirconium isotopes. 4,584,183, Cl. 423-2.000.

Chiba, Masae: *See*—
Taneda, Kozo; Chiba, Masae; Naka, Junichi; and Watanabe, Shunichi, 4,583,884, Cl. 406-73.000.

Chih, Samuel; and Ohba, Osam, to Fujitsu Limited; and Fujitsu Microelectronics Inc. Method for manufacturing a gate array integrated circuit device. 4,584,653, Cl. 364-491.000.

Chilvers, Edward W., Jr.: *See*—
Chamberlin, John M.; Chilvers, Edward W., Jr.; Nunning, Walter J.; and Southern, John H., 4,583,357, Cl. 57-243.000.

Chinese Petroleum Corp.: *See*—
Liu, Kang-Jen; and Lee, Ho-Lun, 4,584,246, Cl. 428-522.000.

Ching, Walter S.: *See*—
Wilson, Patricia A.; Stackhouse, Kenneth B.; Chakraborty, Sujit; Ching, Walter S.; Hill, William D.; Knepp, John B.; Ward, James P.; and Zediker, Warren L., 4,584,165, Cl. 376-216.000.

Chive, Maurice; Constant, Eugene; Leroy, Yves; Mamouni, Ahmed; Robillard, Michele; and Van de Velde, Jean-Claude, to Centre National de la Recherche Scientifique. Method and apparatus for measuring the temperature of a body in microwaves. 4,583,869, Cl. 374-122.000.

Chiwaki, Kenichi: *See*—
Fujino, Teruhisa; Chiwaki, Kenichi; and Narazaki, Sadatoshi, 4,584,580, Cl. 343-18.00E.

Chlanda, Frederick P.; and Mani, Krishnamurthy N., to Allied Corporation. Process for recovering sodium carbonate from trona and other mixtures of sodium carbonate and sodium bicarbonate. 4,584,077, Cl. 204-182.400.

Choi, Jae H.; Fortner, Larry E.; Mottine, John J., Jr.; and Vesperman, William C., to AT&T Technologies; and AT&T Bell Laboratories. Stabilization of PVC bodies. 4,584,241, Cl. 428-379.000.

Choquenet, Pierre; and Carle, Jean C., to Societe Choquenet S.A. Filter press comprising means for filtering mud. 4,584,100, Cl. 210-225.000.

Chrysler Corporation: *See*—
Schenten, James L., 4,583,789, Cl. 303-22.00R.

Chu, Mosi; Chiang, David; and Manber, Solomon, to MCC Associates. Paper supply and stacking apparatus. 4,583,872, Cl. 400-625.000.

Chung, Yeongchoon; and Kim, Myunghwan. Torque-speed control system for asynchronous D.C. brushless motor. 4,584,505, Cl. 318-254.000.

Church, John: *See*—
Granek, Herman; Granek, Murry; and Church, John, 4,583,547, Cl. 128-639.000.

Ciais, Andre ; and Variot, Gilles, to Elf France. Device and installations for the distillation by thin layer evaporation particularly of hydrocarbons, and process for operating this device. 4,584,064, Cl. 203-89.000.

Ciambella, Bart C.; Ciambella, Daryl P.; and Ciambella, Perry A. Portable solar cooking apparatus. 4,583,521, Cl. 126-451.000.

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Ciambella, Bart C.; Ciambella, Daryl P.; and Ciambella, Perry A., 4,583,521, Cl. 126-451.000.

Ciambella, Perry A.: *See*—
Ciambella, Bart C.; Ciambella, Daryl P.; and Ciambella, Perry A., 4,583,521, Cl. 126-451.000.

Ciba-Geigy AG: *See*—
Leppard, David G.; and Rody, Jean, 4,584,265, Cl. 430-551.000.

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Brunner, Hans-Georg, 4,584,013, Cl. 71-94.000.
Burckhardt, Urs, 4,584,314, Cl. 514-450.000.
Drabek, Jozef; Legge, John; and Bachmann, Markus, 4,584,296, Cl. 514-147.000.
Falk, Robert A., 4,584,143, Cl. 558-240.000.
Ferrini, Pier G.; and Goschke, Richard, 4,584,310, Cl. 514-397.000.
Hunziker, Max, 4,584,251, Cl. 429-191.000.

Cichanowski, Stanley W., to SFE Technologies. Miniature monolithic electrical capacitor. 4,584,628, Cl. 361-309.000.

Cincinnati Milacron Inc.: *See*—
Bridges, Edward W.; and Winterford, Charles R., 4,583,257, Cl. 15-93.00R.

Cinco, Marina: *See*—
Tubaro, Aurelia; Della Loggia, Roberto; Banfi, Elena; Cinco, Marina; and Redaelli, Claudio, 4,584,198, Cl. 424-195.100.

Claiborne Electronics, Inc.: *See*—
Boenning, Charles B.; and Moorman, Charles J., 4,584,436, Cl. 179-37.000.

Clairol Incorporated: *See*—
Morrison, Herbert M., 4,584,462, Cl. 219-222.000.

Clamshell Partners Ltd.: *See*—
Hunt, Rowland D.; and Gardner, Kenneth, 4,583,331, Cl. 52-2.000.

Clapp, John G., Jr.: *See*—
Wolff, Robert L.; Watson, Dennis G.; and Clapp, John G., Jr., 4,583,319, Cl. 47-1.700.

Clark Equipment Company: *See*—
Halstensgaard, Gaylen E.; Henline, John W.; and Loraas, Orlan J., 4,583,760, Cl. 280-766.100.

Clesius, Jeffrey J.: *See*—
Shah, Atul P.; Reuss, James L.; Guckert, Toni; and Clesius, Jeffrey J., 4,583,553, Cl. 128-704.000.

Clorox Company, The: *See*—
Foley, Lary L., 4,584,281, Cl. 501-85.000.

Clover, William M., Jr., to Kirstine/Hendricks. Moisture-proof container. 4,583,661, Cl. 222-42.000.

Coble, Ralph P., Jr.: *See*—
Chance, Christopher P.; Coble, Ralph P., Jr.; Ingle, Edwin C.; and Jones, Joye A., 4,584,441, Cl. 179-170.200.

Cocks, Franklin H.; Jones, Phillip L.; and Schaffer, James P. Flat plate luminous display device. 4,584,501, Cl. 313-493.000.

Cody, Michael J.; and Dykstra, Ronald A., to Prince Corporation. Indirect lighting for a vehicle. 4,584,631, Cl. 362-61.000.

Cohen, Sidney M., to Fuller Company. Cement plant dust recovery system. 4,584,022, Cl. 106-100.000.

Coker, Geoffrey G.: *See*—
Findlay, John W. A.; and Coker, Geoffrey G., 4,584,382, Cl. 546-314.000.

Colgate-Palmolive Company: *See*—
Joshi, David P., 4,584,126, Cl. 252-368.000.

Collett, Terry L.; Shaw, Gerald; and Finch, Terence F., to Exxon Research & Engineering Co. Use of vinyl addition copolymers to improve quality of lubricating oil additives. 4,584,111, Cl. 252-32.70E.

Colmon, Daniel; Letemps, Bernard; Delpeyroux, Jean-Pierre; and Fremeaux, Jacques, to Saint-Gobain Vitrage. Glass pane having low emissivity, particular for vehicles. 4,584,236, Cl. 428-333.000.

Colombotto, Amedeo; Della Sala, Ernesto; and Biasutti, Luciano, to SOCIETA ITALIANA VETRO SIV S.p.A. Device for the non-destructive testing of the internal stress state of heat tempered plate glass. 4,584,476, Cl. 250-338.000.

Combe Incorporated: *See*—
Lapidus, Herbert, 4,583,986, Cl. 8-405.000.

Combs, Robert L.: *See*—
Whitehouse, Martin H.; and Combs, Robert L., 4,583,706, Cl. 248-251.000.

Combustion Engineering, Inc.: *See*—
Formanek, Frank J., 4,584,168, Cl. 376-353.000.
Greacen, John S., 4,584,166, Cl. 376-260.000.
Hales, James W., 4,583,411, Cl. 73-862.090.
McMullin, Craig W.; and Weismantel, Steven E., 4,584,164, Cl. 376-216.000.

Cometti, Giuseppe: *See*—
Santi, Roberto; Cometti, Giuseppe; and Pagani, Anselmo, 4,584,145, Cl. 558-406.000.

Comfort, Lance W.: *See*—
Comfort, Richard A., 4,584,633, Cl. 362-253.000.

Comfort, Richard A., to Comfort, Lance W. Combination night light eyeglass holder. 4,584,633, Cl. 362-253.000.

Compagnie Francaise des Petroles: *See*—
Dorleans, Andre ; and Fermaud, Georges, 4,583,603, Cl. 175-324.000.

Compagnie Industrielle des Telecommunications CIT-Alcatel: *See*—
Levy, Michel; and Surie, Serge, 4,584,693, Cl. 375-54.000.

Complex, Inc.: *See*—
Hunter, Robert R., III; and Weston, Robert E., 4,583,972, Cl. 604-133.000.

Conoco Inc.: *See*—
Fenton, Jeff T., 4,584,244, Cl. 428-407.000.

Conroy, David E.: *See*—
Montalbano, Anthony P.; and Conroy, David E., 4,583,550, Cl. 128-644.000.

Consiglio Nazionale Delle Ricerche: *See*—
Alfonso, Giovanni C.; Russo, Saverio; Pedemonte, Enrico; Turturro, Antonio; and Puglisi, Concetto, 4,584,149, Cl. 264-5.000.

Constant, Eugene: *See*—
Chive, Maurice; Constant, Eugene; Leroy, Yves; Mamouni, Ahmed; Robillard, Michele; and Van de Velde, Jean-Claude, 4,583,869, Cl. 374-122.000.

Container Technologies, Inc.: *See*—
Heron, J. Richard, 4,583,352, Cl. 53-570.000.

Cook, Charles R.: *See*—
Moracz, Donald J.; Cook, Charles R.; and Toth, Istvan J., 4,583,274, Cl. 29-156.80B.

Cook, John U.: *See*—
Graves, J. W.; Tate, Harold, Jr.; and Cook, John U., 4,583,323, Cl. 47-67.000.

Cool Water Coal Gasification Program: *See*—
Ostrov, Anatoly A., 4,584,180, Cl. 422-207.000.

Cooley, Nickolas A. Round hay bale handling apparatus having at least one screw spear. 4,583,900, Cl. 414-24.500.

Cooper Industries, Inc.: *See*—
Raketti, Raymond; Schreiber, Daniel; Orgovan, Andrew J.; Adair, George E.; and Burrage, Lawrence M., 4,584,429, Cl. 174-18.000.

Corbett, Scott S., Jr.: *See*—
Riley, Joseph L., 4,583,902, Cl. 414-261.000.

Cordis Corporation: *See*—
Harris, Donald L., 4,583,967, Cl. 604-9.000.
Peers-Trevarton, Charles A., 4,583,543, Cl. 128-419.00P.
Cornell Research Foundation, Inc.: *See*—
Adams, Thomas E.; Grant, Edward R.; Rockney, Bennett H.; and Morrison, Richard J. S., 4,583,710, Cl. 251-129.100.
Karlin, David B.; Patel, Chandra K. N.; Wood, Obert R., II; Bridges, Thomas J.; and Strnad, Albert R., 4,583,539, Cl. 128-303.100.
Cornwall, Kenneth R. Firestop stack fitting and coupling combination. 4,583,565, Cl. 137-1.000.
Corrigan, James I.; and Lunova, Casper P., to Budd Company, The. Methods and means for sequentially measuring the times involved in a plurality of manufacturing operations and for detecting mechanical malfunctions in an automated system. 4,583,280, Cl. 29-563.000.
Cosan Chemical Corporation: *See*—
Leckart, Arthur R.; and Hansen, H. Victor, 4,584,362, Cl. 528-55.000.
Cosar, Paul; and Henin, Jean-Pierre, to Fives-Cail Babcock. Process for calcining pulverulent material. 4,583,943, Cl. 432-14.000.
Cosden Technology, Inc.: *See*—
Fortuna, Vincent E.; and MacLaughlin, Donald N., 4,584,037, Cl. 156-69.000.
Cosman, Eric R.: *See*—
Onik, Gary M.; Cosman, Eric R.; and Wells, Trent H., 4,583,538, Cl. 128-303.00B.
Cotter, Donald P. Roofing and siding system. 4,583,339, Cl. 52-466.000.
Cottevielle, Christian: *See*—
Prigent, Madeleine; Bonicel, Jean P.; and Cottevielle, Christian, 4,584,333, Cl. 524-127.000.
Couch, Robert P., to United Technologies Corporation. Noncontact electrostatic hoop probe for combustion engines. 4,584,531, Cl. 324-464.000.
Coulon, Andre , to Alsthom-Atlantique. Apparatus for depositing metal on the rubbing parts of a turbine rotor. 4,584,081, Cl. 204-272.000.
Coward, James K., to Rensselaer Polytechnic Institute. Fluorine-containing antifolates incapable of polyglutamate formation. 4,584,375, Cl. 544-258.000.
Cowher, Melvyn E.; and Shuskus, Alexander J., to United Technologies Corporation. High rate, low temperature silicon deposition system. 4,583,492, Cl. 118-723.000.
Cox, Bruce M.; and Pattison, William W., Jr., to Halliburton Company. Recirculating foam generator. 4,584,002, Cl. 55-257.0PP.
Craig, Harold M.; and Feder, Ernest, to United Technologies Corp. Rotor blade for a rotary machine. 4,583,914, Cl. 416-204.00A.
Cramer, Jerry W.: *See*—
Borgman, Bradley N.; Cramer, Jerry W.; and Dossey, Don E., 4,583,910, Cl. 414-752.000.
Cramer, Robert V.: *See*—
Allan, Thomas T.; and Cramer, Robert V., 4,584,005, Cl. 55-499.000.
Crandall, Robert P., to Eastman Kodak Company. Electrographic copier developer station. 4,583,841, Cl. 355-3.0DD.
Crane, Harold E., to Ultra Products Systems, Inc. Method and system for monitoring operating efficiency of pipeline system. 4,584,654, Cl. 364-550.000.
Crano, John C.: *See*—
Wiedrich, Charles R.; and Crano, John C., 4,584,420, Cl. 570-227.000.
Crapser, James R., to S. C. Johnson & Son, Inc. Hose-end dispenser. 4,583,688, Cl. 239-314.000.
Crawford, Patrick J. Mobile device for handling material. 4,583,908, Cl. 414-694.000.
Cressy, Clifford E. Variable fit fastener attachment. 4,583,671, Cl. 227-144.000.
Crivello, James P.; and Spencer, Barry A. Spinal exercising apparatus. 4,583,731, Cl. 272-144.000.
Crivello, James V., to General Electric Company. Method for making silicone-organic block polymers. 4,584,356, Cl. 525-479.000.
Crochemore, Michel: *See*—
Ceintrey, Claude; and Crochemore, Michel, 4,584,256, Cl. 430-159.000.
Crosby, Joel S.: *See*—
Hilton, James; and Crosby, Joel S., 4,583,517, Cl. 126-135.000.
Crosby, John J.; and Napiorkowski, John J., to GTE Products Corporation. Transient voltage surge suppressor. 4,584,622, Cl. 361-56.000.
Crouse, Jere W.: *See*—
Ocker, Jerold R.; and Crouse, Jere W., 4,583,966, Cl. 493-374.000.
Crowell Corporation, The: *See*—
Adelman, Herbert B., 4,584,225, Cl. 428-71.000.
Crowley, J. David; and Pearce, Glen A., to U-OP Management & Consultants Ltd. Variable volume vacuum drying chamber. 4,583,301, Cl. 34-73.000.
Crown Textile Company: *See*—
Kamat, Dattatraya V.; and Nabors, James R., 4,583,249, Cl. 2-220.000.
Crucianelli, Mario. Butterfly valve for accordions and its dynamic connection with the key. 4,583,441, Cl. 84-376.00K.
Cseke, Laszlo : *See*—
Balint, Janos; Cseke, Laszlo ; Fabian, Ferenc; Kun, Lajos; and Szarvas, Miklos, 4,584,135, Cl. 260-351.600.
Curry, Wayne J.: *See*—
Brown, William W., Jr.; Curry, Wayne J.; Dahlke, Gerhard P.; Lupul, Francis T.; and Totta, Paul A., 4,583,488, Cl. 118-500.000.
Czernichow, Jean A.; and Chevassus-More, Alain R., to Schlumberger Technology Corp. Method and apparatus for obtaining fluid samples in a well. 4,583,595, Cl. 166-264.000.
D.A.V.I.D. Systems, Inc.: *See*—
Cafiero, Luca; Mazzola, Mario; and Prati, Massimo, 4,584,690, Cl. 375-18.000.
Dahlke, Gerhard P.: *See*—
Brown, William W., Jr.; Curry, Wayne J.; Dahlke, Gerhard P.; Lupul, Francis T.; and Totta, Paul A., 4,583,488, Cl. 118-500.000.
Daicel Chemical Industries, Ltd.: *See*—
Kanematu, Tetuo; and Hamano, Saburo, 4,584,092, Cl. 208-188.000.
Tanaka, Kazunobu; and Maruo, Zenichi, 4,584,345, Cl. 525-67.000.
Daido Steel Company Limited: *See*—
Isokawa, Kenji; Namiki, Kunio; and Takahashi, Kenji, 4,584,032, Cl. 148-12.00B.
Daimler-Benz AG: *See*—
von Hiddessen, Gotz; and Wachtel, Dieter, 4,583,424, Cl. 74-710.500.
Daimler-Benz Aktiengesellschaft: *See*—
Bernauer, Otto; and Wagner, Robert, 4,583,638, Cl. 206-0.700.
Hornung, Walter; Hametner, Gerhard; Ackermann, Wolfgang; Benkowitz, Lothar; Hofmann, Peter; Koch, Dieter; and Hemming, Herbert, 4,583,756, Cl. 280-432.000.
Dainippon Screen Mfg. Co., Ltd.: *See*—
Machida, Yoshihiro; Itoi, Isamu; Imai, Seigo; and Inui, Kozo, 4,583,838, Cl. 355-102.000.
Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Ono, Yoshio, 4,584,612, Cl. 358-285.000.
Dana Corporation: *See*—
Joyner, Robert G., 4,583,960, Cl. 464-134.000.
Dangel, Artur; Frech, Josef; Niess, Willi; Prillipp, Rolf, deceased (by Prillipp, Inge, Hanno Prilipp, Freia Prilipp, heirs); Riegert, Hermann; Wittlinger, Gerhard; and Anderl, Siegfried, to Wurttembergische Metallwarenfabrik AG. Coffee percolator for selectively making normal coffee or espresso. 4,583,449, Cl. 99-279.000.
Daniel, Dale M.: *See*—
Malcom, Lawrence L.; Daniel, Dale M.; Jamison, Conny M.; and Landesman, Robert E., 4,583,555, Cl. 128-782.000.
Danmine Siftware and Technology, Inc.: *See*—
Baumberg, Iosif, 4,583,918, Cl. 417-108.000.
Darjee, Dhiraj H.; and Devine, Daniel E., to Norton Company. Joining tape. 4,584,227, Cl. 428-113.000.
Dart Industries, Inc.: *See*—
Minsky, Norman C., 4,583,653, Cl. 220-300.000.
Das, Santanu: *See*—
Carter, Nicholas J. R.; Middleton, Francisco A.; and Das, Santanu, 4,584,680, Cl. 370-96.000.
Dataproducts New England, Inc.: *See*—
Goldberg, Joshua I.; Lardiere, Benjamin G., Jr.; McCoy, Bruce E.; and Riter, John J., Jr., 4,584,707, Cl. 455-41.000.
Daude, Gerard: *See*—
Bourelier, Claude; Daude, Gerard; and Orain, Roger, 4,584,229, Cl. 428-216.000.
Davenport, John M.: *See*—
Leskovec, Robert A.; Davenport, John M.; and Burman, Orvar B., 4,584,499, Cl. 310-318.000.
Davies, Alan F., to Davies Office Equipment, Ltd. Apparatus for forming visible file pockets. 4,584,051, Cl. 156-463.000.
Davies Office Equipment, Ltd.: *See*—
Davies, Alan F., 4,584,051, Cl. 156-463.000.
Davis, James A., to Firestone Tire & Rubber Company, The. Method for improving green strength properties of vulcanizable rubber compositions. 4,584,350, Cl. 525-232.000.
Davis, James R.: *See*—
Shields, David A.; and Davis, James R., 4,584,442, Cl. 191-12.20R.
Davis, Jonathan P., to Camco, Incorporated. Dual metal seal for a well safety valve. 4,583,596, Cl. 166-332.000.
Davis, Kirk E., to Lubrizol Corporation, The. Method of preparing boron-containing compositions useful as lubricant additives. 4,584,115, Cl. 252-49.600.
Davy McKee Ltd.: *See*—
Sharif, Mohammad; and Turner, Keith, 4,584,419, Cl. 568-864.000.
Day, James C., to North American Philips Consumer Electronics Corp. Electron gun integral beam correctors in a color cathode ray tube. 4,584,500, Cl. 313-414.000.
Dayco Corporation: *See*—
Marsh, Richard L.; and Wetzel, Robert E., 4,583,963, Cl. 474-205.000.
De La Paz Rios, Evelyn. Method for teaching multiplication and division with numbers 6 through 9. 4,583,952, Cl. 434-191.000.
Dean, William C.: *See*—
Anderson, James M.; and Dean, William C., 4,583,609, Cl. 180-65.500.
Dearing, David G.: *See*—
Greenlee, Donald R.; Dearing, David G.; and Tucker, Andrew J., 4,583,590, Cl. 166-216.000.
DEC International: *See*—
Huang, Min-Nan; and Brethorst, David L., 4,583,454, Cl. 99-468.000.
Dechene, Fernand J., to VBM Corporation. Modular oxygen generator. 4,584,001, Cl. 55-162.000.
Degussa Aktiengesellschaft: *See*—
Hinrichs, Walter; Lange, Ludwig; Hammer, Friederich; and Ludwig, Hans, 4,584,068, Cl. 204-68.000.
Panster, Peter; Michel, Rudolf; Buder, Wolfgang; and Kleinschmit, Peter, 4,584,395, Cl. 556-479.000.
Dell, John D.; and Andrus, Milton H., Jr., to Minnesota Mining & Manufacturing Company. Film-forming composition containing an antimicrobial agent and methods of use. 4,584,192, Cl. 424-81.000.

Dell'Acqua, Roberto, to Marelli Autronica S.p.A. Electrical inclination sensor and method for its manufacture. 4,583,296, Cl. 33-366.000.
Della Loggia, Roberto: *See*—
Tubaro, Aurelia; Della Loggia, Roberto; Banfi, Elena; Cinco, Marina; and Redaelli, Claudio, 4,584,198, Cl. 424-195.100.
Della Sala, Ernesto: *See*—
Colombotto, Amedeo; Della Sala, Ernesto; and Biasutti, Luciano, 4,584,476, Cl. 250-338.000.
Delpeyroux, Jean-Pierre: *See*—
Colmon, Daniel; Letemps, Bernard; Delpeyroux, Jean-Pierre; and Fremeaux, Jacques, 4,584,236, Cl. 428-333.000.
DeLue, Norman R.; and Pickens, Stanley R., to PPG Industries, Inc. Process for preparing para-aminophenol. 4,584,070, Cl. 204-74.000.
Demerson, Christopher A.: *See*—
Mobilio, Dominick; Demerson, Christopher A.; and Humber, Leslie G., 4,584,312, Cl. 514-411.000.
Demeure, Loic; Le Rouzic, Jean; and Simon, Jean-Claude. Base for a semiconductor laser. 4,584,688, Cl. 372-36.000.
Demina, Nadezhda A.: *See*—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Ertli, Alisa A.; Marina, Semen I.; Avxentiev, Anatoly G.; Lepetchenko, Stanislav N.; and Serzhantu, Ivan P., 4,583,977, Cl. 604-174.000.
de Mola, Manny L. Food service system. 4,584,466, Cl. 219-386.000.
Dennis, Paul S., Jr.; Kowalski, Anthony M.; and Weiner, Michael, to Hazeltine Corporation. LMS adaptive loop module. 4,584,583, Cl. 343-380.000.
Dennison National Company: *See*—
Wilson, Robert B., 4,583,877, Cl. 402-75.000.
Derechinsky, Victor E.; and Betti, Osvaldo O. Convergent multibeam unit for radiation. 4,583,537, Cl. 128-303.00B.
Desma-Werke GmbH: *See*—
Fink, Lothar; and Fabarius, Werner, 4,583,928, Cl. 425-13.000.
Dettinger, Dietrich: *See*—
Abendroth, Paul; Dettinger, Dietrich; Holl, Roland; and Schales, Wolfgang, 4,583,459, Cl. 101-217.000.
Detty, Michael R.; and Thomas, Harold T., to Eastman Kodak Company. Recording and information record elements comprising tetraluropyrlium dyes. 4,584,258, Cl. 430-270.000.
Deutsche Akzo Coatings & Byk-Mellinckrodt Chemische Products, GmbH: *See*—
Lebling, Karl; Reisser, Helmut; and Saris, Hendrik J. A., 4,583,858, Cl. 356-402.000.
Deutsche Forschungs -und Versuchsarstalt fur Luft -und Raumfahrt e.V.: *See*—
Breitbach, Elmar, 4,583,752, Cl. 280-6.00R.
Deutsche, Kirsten H.: *See*—
Huang, Bao-Shan; Terrell, Ross C.; Deutsche, Kirsten H.; Kudzma, Linas V.; and Lalinde, Nhora L., 4,584,303, Cl. 514-326.000.
Dever, Scott M.: *See*—
Neese, Gerald W.; and Dever, Scott M., 4,583,677, Cl. 229-15.000.
Devine, Daniel E.: *See*—
Darjee, Dhiraj H.; and Devine, Daniel E., 4,584,227, Cl. 428-113.000.
Diaz, Eusebio M. Transmission direct clutch drum removing and installing tool. 4,583,275, Cl. 29-278.000.
Dickey-john Corporation: *See*—
Funk, David B.; Beams, David M.; and Grim, Dennis E., 4,584,655, Cl. 364-550.000.
Dieckelmann, Gerhard; Eckwert, Klemens; Jeromin, Lutz; Peukert, Eberhard; and Steinberner, Udo, to Henkel Kommanditgesellschaft auf Aktien. Continuous process for the catalytic epoxidation of olefinic double bonds with hydrogen peroxide and formic acid. 4,584,390, Cl. 549-526.000.
Diehl GmbH & Co.: *See*—
Erlenmaier, Gunter; and Spies, Klaus, 4,583,792, Cl. 305-42.000.
Weber, Adolf, 4,583,461, Cl. 102-489.000.
Diekman, Robert L.; Dietz, Timothy J.; Docter, Lloyd W.; and Downing, Verlon D., to Huffy Corporation. Bicycle frame. 4,583,755, Cl. 280-281.00R.
Diener, Walter C., to Illinois Tool Works Inc. Method and apparatus for burnishing splines and gears using synchronously rotated gears. 4,583,271, Cl. 29-90.00B.
Dierschow, Duane: *See*—
Ferguson, Thomas A.; Dierschow, Duane; and Hauser, Robert F., 4,583,581, Cl. 164-529.000.
Diesel Kiki Co., Ltd.: *See*—
Iijima, Takeo; Shitara, Mototaka; Sumikawa, Seiji; and Saito, Susumu, 4,583,922, Cl. 417-269.000.
Okamoto, Kenji, 4,583,506, Cl. 123-357.000.
Dietrich, John J.; Steinmeyer, Donald A.; and Hartmann, Dirck T., to McDonnell Douglas Corporation. Balanced solar concentrator system. 4,583,520, Cl. 126-424.000.
Dietz, Timothy J.: *See*—
Diekman, Robert L.; Dietz, Timothy J.; Docter, Lloyd W.; and Downing, Verlon D., 4,583,755, Cl. 280-281.00R.
Digital Scintigraphics, Inc.: *See*—
Genna, Sebastian; and Pang, Sing-Chin, 4,584,478, Cl. 250-363.00S.
Dillon, Michael A.: *See*—
Rawlings, David L.; and Dillon, Michael A., 4,584,148, Cl. 264-2.100.
Dilthey, Ulrich; Plantikow, Ulrich; and Kopp, Walter, to Thyssen AG, vorm August Thyssen-Hutte. Device for arc welding, in particular submerged-arc welding, with one or several fusible electrodes. 4,584,457, Cl. 219-130.210.
Dimeff, John, to Mark Telephone Products, Inc. Signal processor. 4,583,406, Cl. 73-59.00L.
Dimich, Robert A. Ornamental container and display assembly for a seedling plant. 4,583,322, Cl. 47-66.000.
Dines, David R.; Svoboda, George; and Workman, Robert G., to AT&T Technologies, Inc. Apparatus for applying stripes of solder to opposite sides of circuit boards. 4,583,674, Cl. 228-102.000.
Dirlam, John P., to Pfizer Inc. Antibacterial 2-amino-oxazolinones and process therefor. 4,584,385, Cl. 548-225.000.
DiSabatino, Sabatino, to Sani-Therm, Inc. Incinerator. 4,583,469, Cl. 110-346.000.
DiSanzo, Carmine P.: *See*—
Peake, Clinton J.; DiSanzo, Carmine P.; and Engel, John F., 4,584,318, Cl. 514-546.000.
Disco Abrasive Systems, Ltd.: *See*—
Tabuchi, Shuji, 4,583,325, Cl. 51-5.00R.
Dittrich, Peter: *See*—
Battig, Udo; Dittrich, Peter; Oertel, Norbert; Osterland, Guter; Rucknagel, Mathias; Scheler, Werner; and Schultz, Klaus, 4,583,847, Cl. 355-53.000.
Divisek, Jiri; Schmitz, Heinz; and Wullenweber, Heinz, to Kernforschungsanlage Julich GmbH; and Metallgesellschaft AG. Activated electrodes. 4,584,065, Cl. 204-11.000.
Dlugos, Daniel F., to Pitney Bowes Inc. Post office window system with programmable prompts. 4,584,648, Cl. 364-464.000.
Dobson Park Industries P/C: *See*—
Ward, Richard, 4,583,709, Cl. 251-129.150.
Docter, Lloyd W.: *See*—
Diekman, Robert L.; Dietz, Timothy J.; Docter, Lloyd W.; and Downing, Verlon D., 4,583,755, Cl. 280-281.00R.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Kapfer, Jurgen; Korkemeier, Hans; and Groger, Klaus, 4,583,367, Cl. 60-605.000.
Dr. Karl Thomae GmbH: *See*—
Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,584,293, Cl. 514-213.000.
Dohi, Yoshio: *See*—
Mori, Yoshikatsu; Dohi, Yoshio; and Fukagawa, Hideo, 4,583,888, Cl. 408-59.000.
Doi, Yoshihiko: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, 4,584,171, Cl. 419-8.000.
Doll, Ronald J.; Neustadt, Bernard R.; Smith, Elizabeth M.; Magatti, Charles V.; and Gold, Elijah H., to Schering Corporation. Antihypertensive agents. 4,584,285, Cl. 514-19.000.
Domorazek, Gottfried, to AEG KABEL Aktiengesellschaft. Fault indicating circuit for a current consuming load connected to an electronic switching device. 4,584,555, Cl. 340-71.000.
Donn Incorporated: *See*—
Sauer, Gale E., 4,583,340, Cl. 52-484.000.
Dontigney, Warren: *See*—
Rotondo, Italo; and Dontigney, Warren, 4,583,379, Cl. 63-2.000.
Dopp, Matthias; and Schmidt, Erhard, to U.S. Philips Corporation. Measuring cassette for checking magnetic head alignment in a tape cassette recorder. 4,584,620, Cl. 360-128.000.
Dorleans, Andre ; and Fermaud, Georges, to Compagnie Francaise des Petroles. Drill pipe joint. 4,583,603, Cl. 175-324.000.
Dossey, Don E.: *See*—
Borgman, Bradley N.; Cramer, Jerry W.; and Dossey, Don E., 4,583,910, Cl. 414-752.000.
Dotson, A. Steve, to Solan, Eamon. Electrical appliance plug removal alarm. 4,584,570, Cl. 340-568.000.
Douglas, Alan D.; and Reilly, Kenneth T., to GTE Products Corporation. Recovery of tungsten and rhenium. 4,584,185, Cl. 423-49.000.
Dow Chemical Company, The: *See*—
Beaudoin, Daniel A., 4,584,352, Cl. 525-410.000.
Beaver, R. Neal; Alexander, Lloyd E.; and Byrd, Carl E., 4,584,085, Cl. 204-290.00R.
Blanchard, Robert R., 4,584,351, Cl. 525-344.000.
Kramer, H. Carl B.; and Gerhardt, Hans-Joachim, 4,583,337, Cl. 52-302.000.
Wang, Pen-Chung; and Renga, James M., 4,584,408, Cl. 568-48.000.
Dow Corning Corporation: *See*—
Bauman, Therese M.; Lee, Chi-Long; and Rabe, James A., 4,584,324, Cl. 521-88.000.
Blizzard, John D.; and Narula, Dipak, 4,584,355, Cl. 525-477.000.
Chi, Frank K., 4,584,340, Cl. 524-596.000.
Huebner, David J.; and Saam, John C., 4,584,341, Cl. 524-837.000.
Janik, Gloria; and Lo, Peter Y. K., 4,584,361, Cl. 528-15.000.
Lee, Chi-long; and Shyu, Wen-Bin, 4,584,337, Cl. 524-500.000.
Downing, Verlon D.: *See*—
Diekman, Robert L.; Dietz, Timothy J.; Docter, Lloyd W.; and Downing, Verlon D., 4,583,755, Cl. 280-281.00R.
Downs, David A.; and Tecle, Haile, to Warner-Lambert Company. Diphenylmethylene piperidines, compositions and methods of use. 4,584,301, Cl. 514-316.000.
Drabek, Jozef; Legge, John; and Bachmann, Markus, to Ciba-Geigy Corporation. Pesticidal compositions. 4,584,296, Cl. 514-147.000.
Drechsler, Mark A.: *See*—
Hutchins, Walter J.; and Drechsler, Mark A., 4,583,294, Cl. 33-138.000.

Drentea, Cornell, to Honeywell Inc. Automatic dual diversity receiver. 4,584,716, Cl. 455-318.000.

Drescher, Albert A. Cutting insert clamping assembly for cutting tool. 4,583,886, Cl. 407-40.000.

Dresser Industries, Inc.: *See*—
Ayers, David B., 4,583,602, Cl. 175-4.200.
Bishop, Burton D., 4,583,620, Cl. 187-8.750.
Greenlee, Donald R.; Dearing, David G.; and Tucker, Andrew J., 4,583,590, Cl. 166-216.000.
Guest, Graham J., 4,584,000, Cl. 55-73.000.
Nick, Charles F., 4,583,360, Cl. 60-39.030.

Drewes, Gerardus: *See*—
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DRG (UK) Limited: *See*—
Maslin, Roger F.; and Rolfe, John D., 4,583,460, Cl. 101-375.000.

Droste, Reinhard, to Akzo Nv. Bullet-proof vest or the like. 4,584,228, Cl. 428-182.000.

Drummey, James P., Jr.: *See*—
Feuersanger, Alfred E.; and Drummey, James P., Jr., 4,584,454, Cl. 219-118.000.

Dual Systems Corporation: *See*—
Libove, Joel; and Wilcox-Baker, Paul V., 4,584,617, Cl. 360-49.000.

Dubin, Leonard, to Nalco Chemical Company. Silica inhibition: prevention of silica deposition by boric acid/orthorborate ion. 4,584,104, Cl. 210-696.000.

Dubois, Jerry M.; and Spanjer, Keith G., to Motorola, Inc. Electrically isolated semiconductor power device. 4,583,283, Cl. 29-589.000.

DuBose, J. Timothy; Hale, David L.; and Marston, Robert K., to Rockwell International Corporation. Digital direct modulator with type of modulation selection. 4,584,540, Cl. 332-9.00R.

Dudek, Lesley P.: *See*—
Lin, John W.; and Dudek, Lesley P., 4,584,253, Cl. 430-59.000.

Duehren, David W.; and Smith, Michael D., to Motorola, Inc. Switched capacitor envelope detector. 4,584,532, Cl. 328-151.000.

Duesbury, Paul G., to Lucas Industries, plc. Optical fibre connector using single resilient actuating element. 4,583,819, Cl. 350-96.210.

Dugan, Clifton J., Jr. Fishing lure. 4,583,313, Cl. 43-17.100.

Dummer, Gerhard: *See*—
Schmidhammer, Ludwig; Dummer, Gerhard; Haselwarter, Klaus; and Strasser, Rudolf, 4,584,123, Cl. 252-188.310.

Dunham-Bush, Inc.: *See*—
Shaw, David N., 4,583,373, Cl. 62-196.300.

Dunham Tool Company, Inc., The: *See*—
Moody, Harry A.; Skahen, Don H.; and Dunn, John C., 4,583,434, Cl. 82-36.00R.

Dunn, John C.: *See*—
Moody, Harry A.; Skahen, Don H.; and Dunn, John C., 4,583,434, Cl. 82-36.00R.

Dunn, Robert H. Steady state channel select. 4,584,711, Cl. 455-226.000.

Du Pont de Nemours, E. I., and Company: *See*—
Bartlett, Philip L., 4,584,021, Cl. 106-14.420.
Bissot, Thomas C., 4,584,071, Cl. 204-98.000.
Fremont, Joseph M., 4,584,418, Cl. 568-855.000.
Held, Robert P., 4,584,261, Cl. 430-294.000.
Herbert, Paul F.; and Rackley, Robert L., 4,584,240, Cl. 428-373.000.
Lepone, Gerald E., 4,584,011, Cl. 71-93.000.
Miller, Conrad E., 4,584,262, Cl. 430-333.000.
Pruckmayr, Gerfried, 4,584,414, Cl. 568-617.000.
Takeda, Shunji; and Yuyama, Takeshi, 4,584,010, Cl. 71-92.000.

Duranleau, Roger G.; Triebel, Carol A.; and Lambert, Clifford L., to Texaco, Inc. Naphthalene dicarboxylic acid salts as corrosion inhibitors. 4,584,119, Cl. 252-75.000.

Durbin, John A., to Xerox Corporation. Imaging system using a full frame illumination array. 4,583,848, Cl. 355-67.000.

DuVall, John G.; Kirby, Charles E.; and Hardie, Suzanne L., to Procter & Gamble Co., The. Dough rolling process for laminated cookies. 4,584,203, Cl. 426-549.000.

Duvdevani, Ilan: *See*—
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Dykstra, Ronald A.: *See*—
Cody, Michael J.; and Dykstra, Ronald A., 4,584,631, Cl. 362-61.000.

Dynamics Research Corporation: *See*—
Stafford, David H., 4,583,391, Cl. 72-461.000.

Dynamit Nobel AG: *See*—
Hansel, Edward; Huber, Hans; Geier, Gerhard; and Seiler, Claus, 4,584,394, Cl. 556-442.000.

E. R. Squibb & Sons, Inc.: *See*—
Ferguson, Keith T., 4,583,976, Cl. 604-174.000.
Floyd, David; and Krapcho, John, 4,584,131, Cl. 260-239.30B.

E-Systems, Inc.: *See*—
Livingston, William D.; and Jacob, Eugene E., 4,584,679, Cl. 370-94.000.

Eagle Telephonics, Inc.: *See*—
Wenger, Alexander A., 4,584,440, Cl. 179-159.000.

Eastman Kodak Company: *See*—
Crandall, Robert P., 4,583,841, Cl. 355-3.0DD.
Detty, Michael R.; and Thomas, Harold T., 4,584,258, Cl. 430-270.000.
Harvey, Donald M., 4,583,831, Cl. 354-106.000.
Remley, Herbert D., 4,584,255, Cl. 430-139.000.

Ebara Corporation: *See*—
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Ebata, Yoshikazu, to Janome Sewing Machine Co. Ltd. Pattern cam selecting device of a sewing machine. 4,583,473, Cl. 112-465.000.

Ebbinghaus, Wilfried; Henze, Erwin; and Gross, Wilhelm, to Bergische Achsenfabrik Fr. Kotz & Sohne. Adjusting device for vehicle brakes. 4,583,622, Cl. 188-79.50K.

Eckert, Alton B., to Pitney Bowes Inc. Electronic postage meter with a ring counter. 4,584,647, Cl. 364-464.000.

Eckert, Manfred: *See*—
Gronert, Heinz; Eckert, Manfred; Munich, Johann; von Petersdorff, Henning; Mix, Manfred; and Radtke, Wulf, 4,583,519, Cl. 126-418.000.

Eckwert, Klemens: *See*—
Dieckelmann, Gerhard; Eckwert, Klemens; Jeromin, Lutz; Peukert, Eberhard; and Steinberner, Udo, 4,584,390, Cl. 549-526.000.

Economy, Charles G. Desk attachment for shopping cart. 4,583,753, Cl. 280-33.99A.

Eddy, William C.: *See*—
Towers, Kenneth S.; and Eddy, William C., 4,584,488, Cl. 307-106.000.

Edel, Eugen; Feckl, Josef; Grambow, Clemens; Huber, Albert; and Wabner, Dietrich, to MD-Organocell Gesellschaft fuer Zellstoff- und Umwelttechnik mbH. Process for obtaining lignin from alkaline solutions thereof. 4,584,076, Cl. 204-182.400.

Edwards, Arthur J., to Motorola, Inc. Re-regulation circuit for automobile tachometer detection circuit. 4,584,515, Cl. 322-28.000.

Edwards, Joseph H.; and Carey, Michael. Insulated glove. 4,583,248, Cl. 2-164.000.

Egan, James J.; Koze, Jeffrey T.; and Kumagai, Henry Y., to AT&T Technologies, Inc. Methods of and apparatus for storing and delivering a fluid. 4,583,372, Cl. 62-53.000.

Eguchi, Tamiyuki: *See*—
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Eibeck, Richard E.: *See*—
Nalewajek, David; McCurry, Lynn E.; Friedland, David J.; and Eibeck, Richard E., 4,584,184, Cl. 423-15.000.

Eiermann, Horst W., to PCT Pyrochemtek AG; Rockwool AB; and Chemische Fabrik Grunau GmbH. Fireproof covering. 4,584,214, Cl. 428-35.000.

Eilenstein, Wilfried: *See*—
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Eilers, Norbert; and Bragas, Peter, to Blaupunkt-Werke GmbH. Communication system, and transmitter therefor, including special announcement recognition. 4,584,708, Cl. 455-45.000.

Einhorn, Carol J.; and Stegmaier, Joann. Female urinary drainage device. 4,583,983, Cl. 604-329.000.

Ekberg, Bjarne: *See*—
Lehtinen, Antti; Sailas, Vaino ; Lampinen, Markku; and Ekberg, Bjarne, 4,584,058, Cl. 162-199.000.

Eklund, Vidar: *See*—
Turunen, Olli; Huttunen, Jouko; Ekman, Kurt; Eklund, Vidar; and Mandell, Leo, 4,583,984, Cl. 8-125.000.

Ekman, Kurt: *See*—
Turunen, Olli; Huttunen, Jouko; Ekman, Kurt; Eklund, Vidar; and Mandell, Leo, 4,583,984, Cl. 8-125.000.

Elabd, Hammam, to RCA Corporation. Measurement of the current flow in an electric power transmission line by detection of infrared radiation therefrom. 4,584,523, Cl. 324-96.000.

Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; Reinecke, Paul; and Rosslenbroich, Hans-Jurgen, to Bayer Aktiengesellschaft. Substituted hydroxyalkyl-azole fungicidal agents, their preparation and their use. 4,584,308, Cl. 514-383.000.

Electrex, Inc.: *See*—
Varela, Marco E., 4,584,522, Cl. 324-61.00R.

Electro Metals, a division of Demetron, Inc.: *See*—
Hunt, Charles D., 4,583,580, Cl. 164-469.000.

Electro-Sport, Inc.: *See*—
Lambert, Lester T., III, 4,584,572, Cl. 340-703.000.

Elf France: *See*—
Ciais, Andre ; and Variot, Gilles, 4,584,064, Cl. 203-89.000.
Estienne, Patrick; and Sanson, Michel, 4,583,585, Cl. 165-94.000.

Elgarden Aktiengesellschaft: *See*—
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Eli Lilly and Company: *See*—
Molloy, Bryan B.; and Schmiegel, Klaus K., 4,584,404, Cl. 564-347.000.

Elias, Jack: *See*—
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Ellenburg, H. Steve: *See*—
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Ellenburg, Mark O.; and Ellenburg, H. Steve. Foldable wrist braced slingshot with ammunition storage and dispensing means. 4,583,513, Cl. 124-20.00A.

Elperin, Freda; and Tamir, Abraham, to Ben-Gurion University of the Negev Research and Development Authority. Burner for gaseous fuel. 4,583,941, Cl. 431-347.000.

Emerson Electric Co.: *See*—
Bowsky, Benjamin; Honkomp, Glenn A.; and Burrows, Larry G., 4,584,433, Cl. 174-152.0GM.

End Devices, Inc.: *See*—
Montgomery, Richard C.; and Westerman, G. Wayne, 4,583,915, Cl. 417-26.000.
Enders, George E., to NRM Corporation. Tire building method. 4,584,038, Cl. 156-132.000.
Energy Absorption Systems, Inc.: *See*—
Stephens, Barry D.; Morehead, Peter B.; and Welch, James B., 4,583,716, Cl. 256-13.100.
Energy Profiles, Inc.: *See*—
Salisbury, Winfield W., 4,584,159, Cl. 376-107.000.
Engel, John F.: *See*—
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Engelbrecht & Lemmerbrock GmbH & Co.: *See*—
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Engelhard Corporation: *See*—
Chatterjee, Bivabasu; and Wilson, Frank G., 4,583,285, Cl. 29-623.500.
Wittel, Charles F., deceased, 4,583,583, Cl. 165-46.000.
Engelmore, Anthony R.; and Nold, William H. Rotatable electrical connector for coiled telephone cord. 4,583,797, Cl. 339-6.00R.
Erdman, Timothy R., to Chevron Research Company. Fuel-efficient lubricating oil. 4,584,112, Cl. 252-32.70E.
Eriksson, Rolf B.; Jansson, Bertil; and Sjodahl, Jorgen, to LKB-Produkter AB. Collection apparatus. 4,583,573, Cl. 141-250.000.
Erlenmaier, Gunter; and Spies, Klaus, to Diehl GmbH & Co. Assembling aid on crawler track chains. 4,583,792, Cl. 305-42.000.
Ertli, Alisa A.: *See*—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Ertli, Alisa A.; Marina, Semen I.; Avxentiev, Anatoly G.; Lepetchenko, Stanislav N.; and Serzhantu, Ivan P., 4,583,977, Cl. 604-174.000.
Eschenfelder, Peter; and Quentin, Jorg, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Structural component having a twisted profile and method and apparatus for producing such structural component. 4,583,891, Cl. 409-120.000.
Esselte Pendaflex Corporation: *See*—
Volk, Heinrich, 4,583,456, Cl. 101-111.000.
Volk, Heinrich, 4,583,457, Cl. 101-111.000.
Estienne, Patrick; and Samson, Michel, to Elf France. System for cleaning tube-type exchangers automatically during operation. 4,583,585, Cl. 165-94.000.
Etablissements Nativelle S.A.: *See*—
Jarreau, Francois-Xavier; and Koenig, Jean-Jacques, 4,584,289, Cl. 514-182.000.
Evans, Dale B.: *See*—
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Everhart, Douglas R.: *See*—
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Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,584,128, Cl. 252-522.00R.
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Ewing, Harry R.; and Ewing, Craig R. Taper adapter and method for making same. 4,583,890, Cl. 408-239.00A.
Ex-Cell-O Corporation: *See*—
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Mitchell, William A., 4,583,894, Cl. 409-233.000.
Exxon Research & Engineering Company: *See*—
Barthomeuf, Denise M., 4,584,424, Cl. 585-828.000.
Collett, Terry L.; Shaw, Gerald; and Finch, Terence F., 4,584,111, Cl. 252-32.70E.
Gutierrez, Antonio; Brownawell, Darrell W.; Walker, Thad O.; and Brois, Stanley J., 4,584,386, Cl. 548-237.000.
Lundberg, Robert D.; Peiffer, Dennis G.; and Duvdevani, Ilan, 4,584,339, Cl. 524-516.000.
Pine, Lloyd A., 4,584,091, Cl. 208-114.000.
Soled, Stuart L.; and Fiato, Rocco A., 4,584,323, Cl. 518-700.000.
Wagner, John P.; and Hsu, Edward C., 4,584,083, Cl. 204-280.000.
Eymuller, Helmut: *See*—
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Barth, Gunter; and von Langsdorff, Fritz, 4,583,341, Cl. 52-589.000.
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Fabian, Ferenc: *See*—
Balint, Janos; Cseke, Laszlo ; Fabian, Ferenc; Kun, Lajos; and Szarvas, Miklos, 4,584,135, Cl. 260-351.600.
Fabre, Jean-Louis; Farge, Daniel; James, Claude; and Lave, Daniel, to Rhone-Poulenc Sante. Pyrrolo[1,2-c]-1,3-thiazines. 4,584,297, Cl. 514-226.000.
Factory Mutual Research Corporation: *See*—
Shapiro, Mark A., 4,583,369, Cl. 60-657.000.
Fairchild Camera & Instrument Corp.: *See*—
Vora, Madhukar B.; and Hingarh, Hemraj K., 4,584,594, Cl. 357-15.000.
Falcone, Mary L.; and Zann, Nicholas T. Fortune telling game and deck of cards. 4,583,737, Cl. 273-161.000.
Falk Corporation, The: *See*—
Spridco, Dale R., 4,583,626, Cl. 192-70.250.
Falk, Robert A., to Ciba Geigy Corporation. Fluoroalkyl-carbamyl group containing acrylates and methacrylates. 4,584,143, Cl. 558-240.000.
Fallas, David M. Automatic case packing apparatus. 4,583,351, Cl. 53-501.000.
Fallon, Regis, to La Francaise Metallurgie. Jig for locating drilling holes in wood panels. 4,583,889, Cl. 408-115.00R.
Fanuc Ltd.: *See*—
Kiya, Nobuyuki, 4,584,509, Cl. 318-571.000.
Fanuc Ltd: *See*—
Nozawa, Ryoichiro; and Kawamura, Hideaki, 4,583,433, Cl. 82-1.00C.
Fardeau, Benoit H.; Chapuis, Claude; and Austruy, Georges, to Gaz de France. Gas burner of the pre-mixture type with flame control and utilization of that burner especially in an immersed pipe installation. 4,583,938, Cl. 431-79.000.
Farge, Daniel: *See*—
Fabre, Jean-Louis; Farge, Daniel; James, Claude; and Lave, Daniel, 4,584,297, Cl. 514-226.000.
Farley, D. Gray. Metal shielded retaining ring. 4,583,430, Cl. 81-177.850.
Farmos Yhtyma-Oy: *See*—
Parhi, Seppo S. L., 4,584,383, Cl. 546-278.000.
Farnsworth, Carl D. Method and apparatus for catalytically converting fractions of crude oil boiling above gasoline. 4,584,090, Cl. 208-80.000.
Fava, Augusto. Golf swing training apparatus and method. 4,583,738, Cl. 273-186.00C.
Feckl, Josef: *See*—
Edel, Eugen; Feckl, Josef; Grambow, Clemens; Huber, Albert; and Wabner, Dietrich, 4,584,076, Cl. 204-182.400.
Feder, Ernest: *See*—
Craig, Harold M.; and Feder, Ernest, 4,583,914, Cl. 416-204.00A.
Federal-Mogul Corporation: *See*—
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Fedick, John; and Schweitzer, Francis J., Jr. Packaged replacement window. 4,583,639, Cl. 206-325.000.
Fehrer, Ernst. Apparatus for making a fibrous web. 4,583,267, Cl. 19-99.000.
Fenaux, Philippe: *See*—
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Fenton, Jeff T., to Conoco Inc. Preparation of cold flow resistant polymer powders. 4,584,244, Cl. 428-407.000.
Ferguson, Keith T., to E. R. Squibb & Sons, Inc. Catheter support. 4,583,976, Cl. 604-174.000.
Ferguson, Thomas A.; Dierschow, Duane; and Hauser, Robert F., to TRW Inc. Core material and method of forming cores. 4,583,581, Cl. 164-529.000.
Ferguson, William B., to Roe Incorporated. Conveying apparatus. 4,583,637, Cl. 198-787.000.
Fermaud, Georges: *See*—
Dorleans, Andre ; and Fermaud, Georges, 4,583,603, Cl. 175-324.000.
Fernbach, Erwin A.; and Guerriere, Robert A. Catalytic unit for gas phase catalysis, more especially for use with wood- and other solid fuel-burning stoves. 4,584,177, Cl. 422-115.000.
Ferrar, Carl M.; and Zincone, Robert, to United Technologies Corporation. Optical position and orientation sensing systems. 4,583,862, Cl. 356-152.000.
Ferren, Bran. Spatial imaging system. 4,584,704, Cl. 382-65.000.
Ferrini, Pier G.; and Goschke, Richard, to Ciba-Geigy Corporation. Novel mercaptoimidazole derivatives. 4,584,310, Cl. 514-397.000.
Fessler, Ewald, to Natec Reich, Summer GmbH. & Co. KG. Slab-cutting machine. 4,583,435, Cl. 83-90.000.
Feucht, Fritz: *See*—
Storz, Regina; Feucht, Fritz; and Storandt, Ralf, 4,583,324, Cl. 49-367.000.
Feuersanger, Alfred E.; and Drummey, James P., Jr., to GTE Laboratories Incorporated. Method of welding a lamp feedthrough assembly; and apparatus therefor. 4,584,454, Cl. 219-118.000.
Fiato, Rocco A.: *See*—
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Ficon, Joseph: *See*—
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Fidelipac Corporation: *See*—
Sirkis, Michael L., 4,583,669, Cl. 226-35.000.
Field, Thomas T.; Chen, Otis Y.; Geary, Arthur R.; Salkeld, Richard W.; and Ulion, Nicholas E., to United Technologies Corporation. Heat treatment of single crystals. 4,583,608, Cl. 148-1.000.
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Finazzo, Victor A.: *See*—
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Finch, Terence F.: *See*—
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Findlay, John W. A.; and Coker, Geoffrey G. Pyridyl acrylate compound. 4,584,382, Cl. 546-314.000.
Fine Organics Limited: *See*—
Hollowood, John, 4,584,407, Cl. 564-487.000.
Fingerhut, Arthur L.; and Fingerhut, Howard W., to Fingerhut, Arthur Larry. Garment including composite insulation material. 4,583,247, Cl. 2-69.000.

Fingerhut, Arthur Larry: *See*—
Fingerhut, Arthur L.; and Fingerhut, Howard W., 4,583,247, Cl. 2-69.000.

Fingerhut, Howard W.: *See*—
Fingerhut, Arthur L.; and Fingerhut, Howard W., 4,583,247, Cl. 2-69.000.

Fink, Lothar; and Fabarius, Werner, to Desma-Werke GmbH. Apparatus for rebuilding portions of molded elements, particularly vehicle tires. 4,583,928, Cl. 425-13.000.

Finkelman, Malcolm A. J.; and Yang, Huei-Hsuing, to Genex Corporation. Method for the production of phenylalanine ammonia-lyase by fermentation. 4,584,273, Cl. 435-232.000.

Finkelstein, Paul; and Yost, Kevin G., to Johnson & Johnson Products, Inc. Dental floss. 4,583,564, Cl. 132-91.000.

Finn, Cornelius B. Child's seat sunscreen. 4,583,780, Cl. 297-184.000.

Finn, Everett N., to Brown & Williamson Tobacco Corporation. Adapter for a package dispensing machine. 4,583,657, Cl. 221-199.000.

Firestone Tire & Rubber Company, The: *See*—
Davis, James A., 4,584,350, Cl. 525-232.000.

Firmenich SA: *See*—
Uijttewaal, Arnoldus; and Kastner, Dietrich, 4,584,127, Cl. 252-522.00R.

Fisch, Richard S., to Minnesota Mining and Manufacturing Company. Black and white disc construction to record color images. 4,584,615, Cl. 358-332.000.

Fischbeck, Kenneth H.; and Wright, Allen T., to Xerox Corporation. Shear mode transducer for drop-on-demand liquid ejector. 4,584,590, Cl. 346-140.00R.

Fischer, Herbert: *See*—
Freise, Werner; and Fischer, Herbert, 4,584,513, Cl. 318-701.000.

Fischer, Jochen, to Kochs Adler AG. Sewing machine having improved corner stitch accuracy. 4,583,476, Cl. 112-275.000.

Fisher, Kenneth J.; and Roche, John N., to American Sterilizer Company. Locking pin and guide mechanism for a door closure. 4,583,655, Cl. 220-346.000.

Fishman, A. Harry; and Bottitta, Joseph, to APL Corporation. Partitioning dispensing container. 4,583,667, Cl. 222-142.600.

Fives-Cail Babcock: *See*—
Cosar, Paul; and Henin, Jean-Pierre, 4,583,943, Cl. 432-14.000.

Flamand, Jean; Gacoin, Philippe; and Laude, Jean-Pierre, to Instruments S.A. Wavelength multiplexer/demultiplexer using optical fibers. 4,583,820, Cl. 350-96.190.

Flamig, Hans: *See*—
Schiel, Christian; Steiner, Karl; and Flamig, Hans, 4,584,059, Cl. 162-361.000.

Flanagan, Cherrie; and Gilbert, Arnold I., to Gilbert Apparel Group, Inc. Sports bra. 4,583,544, Cl. 128-482.000.

Flanders Filters, Inc.: *See*—
Allan, Thomas T.; and Cramer, Robert V., 4,584,005, Cl. 55-499.000.

Fletcher, Kenneth S.: *See*—
Reddy, Redreddy S.; Filoni, Toussaint; Fletcher, Kenneth S.; Shaanan, Gad J.; and Walsh, Anthony J., 4,583,466, Cl. 105-447.000.

Flexivol, Inc.: *See*—
Apffel, Fred, 4,584,006, Cl. 62-30.000.

Floating Membranes, Inc.: *See*—
Paddock, Paul W., 4,584,439, Cl. 179-115.5PV.

Flores, Amalio G.: *See*—
Flores, Jose O.; and Flores, Amalio G., 4,583,278, Cl. 29-467.000.

Flores, Jose O.; and Flores, Amalio G. Fence building aid and method. 4,583,278, Cl. 29-467.000.

Florida Energy Control Corp.: *See*—
Hernandez, Orlando, 4,583,682, Cl. 236-46.00R.

Floyd, David; and Krapcho, John, to E. R. Squibb & Sons, Inc. Benzothiazepine derivatives. 4,584,131, Cl. 260-239.30B.

Flynn, Vincent J. Radiopaque polyvinyl-silicone network resin compositions and medical-surgical tubings prepared therefrom. 4,584,326, Cl. 523-112.000.

FMC Corporation: *See*—
Anderson, James M.; and Dean, William C., 4,583,609, Cl. 180-65.500.
Martinez, Anthony J., 4,584,306, Cl. 514-369.000.
Peake, Clinton J.; DiSanzo, Carmine P.; and Engel, John F., 4,584,318, Cl. 514-546.000.
Treves, Gino R.; and Baum, Burton M., 4,584,378, Cl. 546-124.000.

Focke & Co.: *See*—
Focke, Heinz; and Balmer, Oskar, 4,583,571, Cl. 141-83.000.

Focke, Heinz; and Balmer, Oskar, to Focke & Co. Apparatus for forming and transporting away tobacco portions. 4,583,571, Cl. 141-83.000.

Foley, Lary L., to Clorox Company, The. Controlled delivery of immiscible materials into an aqueous system. 4,584,281, Cl. 501-85.000.

Foley, Paul, to Celanese Corporation. Monomeric thioloesterification of 1,3-alkadiene. 4,584,144, Cl. 558-250.000.

Fong, Dodd W., to Nalco Chemical Company. Scale inhibitors for preventing or reducing calcium phosphate and other scales. 4,584,105, Cl. 210-701.000.

Ford Motor Company: *See*—
Hahne, Dieter, 4,583,423, Cl. 74-689.000.
Schechter, Michael M., 4,583,508, Cl. 123-449.000.
Schechter, Michael M.; and Simko, Aladar O., 4,583,509, Cl. 123-451.000.
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Forestier, Alain; and Fenaux, Philippe, to Telecommunications Radioelectriques et Telephoniques T.R.T. Ringing signal generator. 4,584,576, Cl. 340-825.380.

Formanek, Frank J., to Combustion Engineering, Inc. System for controlling destructive vibration of a nuclear control rod. 4,584,168, Cl. 376-353.000.

Fort, Jacques, to "Les Applications Industrielles Vosgiennes" en abrege "S.A.P.I.V.O.G." . Device for picking up, transferring and turning a textile web. 4,583,727, Cl. 271-19.000.

Fortner, Larry E.: *See*—
Choi, Jae H.; Fortner, Larry E.; Mottine, John J., Jr.; and Vesperman, William C., 4,584,241, Cl. 428-379.000.

Fortuna, Vincent E.; and MacLaughlin, Donald N., to Cosden Technology, Inc. Inertial spin welding of thermoplastic and thermoplastic coated container parts. 4,584,037, Cl. 156-69.000.

Foster Wheeler Energy Corporation: *See*—
Rabe, George B., 4,583,570, Cl. 137-340.000.

Foundation Korea Campus Crusade for Christ: *See*—
Soo, Choi Y., 4,583,951, Cl. 434-178.000.

Franchy, Rene ; Ibach, Harald; and Bruchmann, Heinz D., to KFA Julich. Electron energy analyzer with multi-channel detector. 4,584,474, Cl. 250-305.000.

Frank, Andrew A.; and Omitsu, Takashi, to Aisin Seiki Kabushiki Kaisha. Continuously charged flywheel type power delivery system. 4,583,505, Cl. 123-198.00F.

Frank, Rudiger; Schramm, Herbert; Kopper, Werner; and Worner, Dieter, to Robert Bosch GmbH. Wheel spin prevention system. 4,583,611, Cl. 180-197.000.

Frank, Werner; and Irregeher, Josef F., to Illbruck GmbH Schaumstofftechnik. Foam material sound absorption. 4,584,232, Cl. 428-247.000.

FranRica Mfg. Inc.: *See*—
Heron, J. Richard, 4,583,352, Cl. 53-570.000.

Franz, Friedhelm; Nestler, Walter; Wobst, Eberhard; Kluge, Christian; Preussker, Egon; and Ulbrich, Gunther, to VEB Kombinat Luft-und Kaltetechnik. Temperature and liquid level control system for fluid cycles. 4,583,374, Cl. 62-210.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H: *See*—
Theurer, Josef, 4,583,895, Cl. 409-295.000.

Franzolini, Marc; Maria, Edmond; Vanderschaeghe, Alain; and Bezier, Jean, to Stein Industrie. Assembly device of ferritic stainless steel tubes on a carbon steel tube-plate, and process of manufacturing this device. 4,583,588, Cl. 165-173.000.

Frech, Josef: *See*—
Dangel, Artur; Frech, Josef; Niess, Willi; Prillipp, Rolf, deceased; Riegert, Hermann; Wittlinger, Gerhard; and Anderl, Siegfried, 4,583,449, Cl. 99-279.000.

Freeburg, Thomas A.: *See*—
Kneisel, Thomas F.; Balzano, Quirino; and Freeburg, Thomas A., 4,584,709, Cl. 455-78.000.

Freeman Chemical Corporation: *See*—
Smith, Gary L., 4,583,691, Cl. 239-112.000.

Freeman, Gerald C., to Pitney Bowes Inc. Load cell assembly with adjustable stiffness. 4,583,607, Cl. 177-244.000.

Freeman, Maynard L.: *See*—
Kleinke, Bernard L.; and Freeman, Maynard L., 4,583,523, Cl. 128-1.00D.

Freise, Werner; and Fischer, Herbert, to Siemens Aktiengesellschaft. Motor/generator operating on the reluctance principle. 4,584,513, Cl. 318-701.000.

Fremeaux, Jacques: *See*—
Colmon, Daniel; Letemps, Bernard; Delpeyroux, Jean-Pierre; and Fremeaux, Jacques, 4,584,236, Cl. 428-333.000.

Fremont, Joseph M., to Du Pont de Nemours, E. I., and Company. Preparation of butynediol. 4,584,418, Cl. 568-855.000.

Fresenius AG: *See*—
Zenglein, Wolfgang; and Weinbeer, Franz-Josef, 4,583,924, Cl. 417-420.000.

Freund, Erwin. Pressure-change indicator. 4,583,484, Cl. 116-268.000.

Frey, Luthur R., to Boeing Company, The. Apparatus for forming thermoplastic laminates into major sections. 4,583,935, Cl. 425-384.000.

Frich, Mark R.: *See*—
Schaumburg, Edward G.; Recht, Peter A.; and Frich, Mark R., 4,583,286, Cl. 29-730.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Hartwig, Jurgen; Jachowski, Johannes; and Pant, Paul, 4,584,015, Cl. 75-10.00V.

Friedland, David J.: *See*—
Nalewajek, David; McCurry, Lynn E.; Friedland, David J.; and Eibeck, Richard E., 4,584,184, Cl. 423-15.000.

Friedrich, Baldur: *See*—
Klages, Horst; Bonatz, Hartmut; Appun, Ernst; Wahnschaffe, Klaus-Dieter; Friedrich, Baldur; and Jakal, Karl H., 4,584,463, Cl. 219-306.000.

Frisbee, Claude M., to J. I. Case Company. Hydraulic backhoe latch mechanism. 4,583,906, Cl. 414-686.000.

Frischmann, Peter G.: *See*—
Taub, Alan I.; and Frischmann, Peter G., 4,584,036, Cl. 148-120.000.

Frister, Manfred, to Robert Bosch GmbH. Internally force-ventilated claw-pole alternator, particularly for automotive use. 4,584,496, Cl. 310-60.00R.

Fritschi, Edgar: *See*—
Satzinger, Gerhard; Barth, Hubert; Hartenstein, Johannes; Herrmann, Manfred; Fritschi, Edgar; and Schutt, Ilse-Dore, 4,584,374, Cl. 544-247.000.
Fritze, Keith R., to Optical Storage International. Reed-Solomon error correction apparatus. 4,584,686, Cl. 371-37.000.
Fronticelli-Bucci, Clara: *See*—
Bucci, Enrico; Fronticelli-Bucci, Clara; and Hosmane, Ramachandra, 4,584,130, Cl. 260-112.00B.
Frost, Albert C.; and Yang, Chang-Lee, to Union Carbide Corporation. Cyclic process for producing methane in a tubular reactor with effective heat removal. 4,583,994, Cl. 48-197.00R.
Frost, Edward L.; and Lawrence, Leslie, to United States of America, Air Force. Medium PRF pulse doppler radar processor for dense target environments. 4,584,579, Cl. 343-17.10R.
Fry, Raymond A. Automatic gate for checkout lane. 4,583,619, Cl. 186-59.000.
Fu, Long C. Method and an apparatus for inductively welding a front fork of bicycle. 4,584,453, Cl. 219-10.430.
Fu, Yun-Lung; and Wang, Samuel S., to American Cyanamid Company. Neutral hydrocarboxycarbonyl thionocarbamate sulfide collectors. 4,584,097, Cl. 209-166.000.
Fudanuki, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Logic simulation apparatus. 4,584,642, Cl. 364-200.000.
Fuhrmann, Klaus: *See*—
Winckler, Lothar; Fuhrmann, Klaus; Graeser, Ulrich; and Wenning, Peter, 4,583,995, Cl. 48-197.00R.
Winckler, Lothar; Fuhrmann, Klaus; Graeser, Ulrich; and Wenning, Peter, 4,584,060, Cl. 201-32.000.
Fuji Photo Film Co., Ltd.: *See*—
Hirose, Masuhiko; and Akao, Mutsuo, 4,584,234, Cl. 428-323.000.
Hirose, Takeshi; Nakamura, Kotaro; and Furutachi, Nobuo, 4,584,266, Cl. 430-555.000.
Iwasaki, Masayuki; Maeda, Minoru; and Shinozaki, Fumiaki, 4,584,260, Cl. 430-288.000.
Kato, Hisatoyo, 4,584,483, Cl. 250-459.100.
Ohki, Nobutaka; and Yoshida, Yoshinobu, 4,584,264, Cl. 430-542.000.
Okamura, Hisashi; and Sakakibara, Yoshio, 4,584,257, Cl. 430-219.000.
Okano, Shinichi; Koizumi, Takashi; and Uekusa, Tadashi, 4,584,275, Cl. 435-290.000.
Shiga, Koji, 4,583,837, Cl. 355-75.000.
Suzuki, Toshiaki; and Horikawa, Kazuo, 4,584,482, Cl. 250-459.100.
Takahashi, Osamu, 4,584,263, Cl. 430-533.000.
Fujihara, Mutsumi: *See*—
Ozeki, Takeshi; Tamura, Toshifumi; and Fujihara, Mutsumi, 4,584,678, Cl. 370-85.000.
Fujii, Tsunenori; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Koto, Kaoru; Ohmori, Hideki; Yokokura, Hisao; Okabe, Yoshiaki; Hattori, Shintaroo; Kitamura, Teruo; Mukoh, Akio; and Sato, Mikio, to Hitachi, Ltd. Liquid crystal compound and liquid crystal composition. 4,584,120, Cl. 252-299.630.
Fujimoto, Masakazu; and Inoue, Naoyuki, to Ebara Corporation. Apparatus for cleaning heat exchanger tubes. 4,583,586, Cl. 165-95.000.
Fujino, Teruhisa; Chiwaki, Kenichi; and Narazaki, Sadatoshi, to Kabushiki Kaisha Koden Seisakusho. Apparatus for rejecting jamming waves. 4,584,580, Cl. 343-18.00E.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Tertiary hydroxyl carboxaldehydes. 4,584,409, Cl. 568-420.000.
Fujisawa, Koichi: *See*—
Kobayashi, Kyoji; Kato, Masaru; Fujisawa, Koichi; Nagamine, Yoshinori; and Nakajima, Fumio, 4,584,508, Cl. 318-483.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,584,290, Cl. 514-206.000.
Fujita, Shigeru; Banzai, Hideo; and Tanaka, Hideo, to Toshiba Kikai Kabushiki Kaisha. Injection pressure monitoring apparatus. 4,583,931, Cl. 425-149.000.
Fujito, Shohgo: *See*—
Suzuki, Masakuni; Maeyama, Sadao; Arai, Kiyoshi; Kaneko, Yoshio; and Fujito, Shohgo, 4,584,601, Cl. 358-80.000.
Fujitsu Limited: *See*—
Arakawa, Hideki; and Kawashima, Hiromi, 4,584,494, Cl. 307-603.000.
Chih, Samuel; and Ohba, Osam, 4,584,653, Cl. 364-491.000.
Tabuchi, Shuji, 4,583,325, Cl. 51-5.00R.
Takaoka, Matsuo; Sasaki, Nobuo; Kawamura, Seiichiro; and Hataishi, Osamu, 4,584,025, Cl. 148-1.500.
Yazuka, Hiroyuki; and Nakazawa, Isao, 4,584,692, Cl. 375-38.000.
Fujitsu Microelectronics Inc.: *See*—
Chih, Samuel; and Ohba, Osam, 4,584,653, Cl. 364-491.000.
Fukagawa, Hideo: *See*—
Mori, Yoshikatsu; Dohi, Yoshio; and Fukagawa, Hideo, 4,583,888, Cl. 408-59.000.
Fukssawa, Yoshiro: *See*—
Maeda, Hirohumi; Fukasawa, Yoshiro; and Kobayashi, Makoto, 4,583,853, Cl. 356-323.000.
Fukuhara, Hiroshige, to Nissan Motor Company, Limited. Automotive radio receiver with radio frequency interference elimination circuit. 4,584,714, Cl. 455-297.000.
Fukui, Yoshiharu: *See*—
Kakugo, Masahiro; Fukui, Yoshiharu; Wakatsuki, Kizuku; Ima, Seiichiro; and Kimura, Junichi, 4,584,239, Cl. 428-349.000.
Fukura, Kenichi; Nagata, Kazuhisa; and Yamauchi, Nobuhiro, to Aisin Seiki Kabushiki Kaisha. Pantograph jack apparatus. 4,583,713, Cl. 254-126.000.
Fukushima, Shozo: *See*—
Tokunaga, Yasuyuki; and Fukushima, Shozo, 4,584,044, Cl. 156-344.000.
Fuller Company: *See*—
Cohen, Sidney M., 4,584,022, Cl. 106-100.000.
Fuller, Kip L., to Product Masters, Inc. Waterproof enclosure for portable radio or tape player. 4,584,718, Cl. 455-351.000.
Funaki, Yuji: *See*—
Ishiguri, Yukio; Takano, Hirotaka; and Funaki, Yuji, 4,584,309, Cl. 514-383.000.
Funk, David B.; Beams, David M.; and Grim, Dennis E., to Dickey-john Corporation. Moisture tester. 4,584,655, Cl. 364-550.000.
Furst Karl; and Kroll, Lambert. Seat bath unit. 4,583,251, Cl. 4-555.000.
Furukawa, Toshio: *See*—
Hatsutta, Susumu; and Furukawa, Toshio, 4,583,781, Cl. 297-284.000.
Furutachi, Nobuo: *See*—
Hirose, Takeshi; Nakamura, Kotaro; and Furutachi, Nobuo, 4,584,266, Cl. 430-555.000.
G A Serlachius Oy: *See*—
Turunen, Lasse, 4,583,471, Cl. 111-2.000.
G. D. Searle & Co.: *See*—
Mueller, Richard A.; and Partis, Richard A., 4,584,397, Cl. 560-75.000.
G.D Societa' per Azioni: *See*—
Mattei, Riccardo; and Belvederi, Bruno, 4,583,557, Cl. 131-84.100.
Gabriel, Fred C., to Perkin-Elmer Corporation, The. Active translation sensor. 4,584,471, Cl. 250-237.00G.
Gacoin, Philippe: *See*—
Flamand, Jean; Gacoin, Philippe; and Laude, Jean-Pierre, 4,583.820, Cl. 350-96.190.
Gadsby, William H. Method and apparatus for reclaiming coal. 4,584,094, Cl. 209-17.000.
Gaither, Dolphard. Sealing device for facilitating pressuring of tubeless tires. 4,583,578, Cl. 157-1.100.
Gajjar, Jagdish T., to General Electric Company. Method for improving message reception from multiple sources. 4,584,685, Cl. 371-35.000.
GAL International Industries Inc.: *See*—
Lapsker, Itzchak, 4,583,328, Cl. 51-251.000.
Galli, Ramon. Apparatus for treating cement kiln dust. 4,584,179, Cl. 422-187.000.
Galluch, Richard J.: *See*—
Yant, Robert E.; and Galluch, Richard J., 4,584,178, Cl. 422-140.000.
Ganguly, Ashit K.: *See*—
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,584,133, Cl. 260-245.20R.
GAO Gesellschaft fur Automation und Organisation mbH: *See*—
Mitzel, Wilhelm; and Serester, Alexander, 4,583,398, Cl. 73-156.000.
Garay, Oscar M.: *See*—
Marko, Paul D.; Kneisel, Thomas F.; and Garay, Oscar M., 4,584,585, Cl. 343-702.000.
Garcia, Ricardo; and Marion, Robert H., to AVX Corporation. Method of making ceramic capacitor and resulting article. 4,584,629, Cl. 361-321.000.
Garde, Patria P. Blood loss monitor. 4,583,546, Cl. 128-638.000.
Gardner, Elmer W., Jr.: *See*—
Gardner, Paul R.; and Gardner, Elmer W., Jr., 4,583,512, Cl. 123-557.000.
Gardner, Kenneth: *See*—
Hunt, Rowland D.; and Gardner, Kenneth, 4,583,331, Cl. 52-2.000.
Gardner, Paul R.; and Gardner, Elmer W., Jr. Fuel feed and fuel vaporization system. 4,583,512, Cl. 123-557.000.
Gardziella, Arno; Adolphs, Peter; and Kwasniok, Alois, to Ruetgerswerke Aktiengesellschaft. Hardenable molding masses and their use. 4,584,329, Cl. 523-145.000.
Garlick, George F. J., to Hughes Aircraft Company. Solar energy converter employing a fluorescent wavelength shifter. 4,584,428, Cl. 136-257.000.
Garnier, Michel, to SO.M.A. Europe Transmissions Societe Nouvelle Mecanique et Automobile. Wheel hub with integral planetary speed reducer. 4,583,428, Cl. 74-785.000.
Garrett, Ian, to British Telecommunications. Optical communication system using pulse position modulation. 4,584,720, Cl. 455-608.000.
Garrison, Roy. Method and apparatus for hitching a trailer to a motor vehicle. 4,583,481, Cl. 116-28.00R.
Garvin, Clifton W.: *See*—
Taylor, Taliaferro H., Jr.; Johnk, Robert T.; and Garvin, Clifton W., 4,584,543, Cl. 333-103.000.
Gas Research Institute: *See*—
Krieger, David A., 4,583,936, Cl. 431-1.000.
Gaskell, David J., to Lucas Industries public limited company. Fuel injection nozzle. 4,583,687, Cl. 239-118.000.
Gaud, Jacques V.; and Kornmann, Michel, to Battelle Memorial Institute. Method of detecting the defects in a dielectric coating at the surface of an electrically conductive underlayer. 4,584,521, Cl. 324-54.000.
Gautheret, Georges. Self-energized commutation device sensitive to a temperature gradient. 4,583,867, Cl. 374-113.000.

Gaz de France: *See—*
Fardeau, Benoit H.; Chapuis, Claude; and Austruy, Georges, 4,583,938, Cl. 431-79.000.
Gazda, Imre I.; and Sizer, Phillip S., to Otis Engineering Corporation. Well test apparatus and methods. 4,583,592, Cl. 166-250.000.
GCA Corporation: *See—*
Moore, Robert C., 4,583,856, Cl. 356-358.000.
Geary, Arthur R.: *See—*
Field, Thomas T.; Chen, Otis Y.; Geary, Arthur R.; Salkeld, Richard W.; and Ulion, Nicholas E., 4,583,608, Cl. 148-1.000.
GEC Avionics Limited: *See—*
Koetser, Adrian H., 4,583,814, Cl. 350-1.200.
Gecht, Brent A.; and Riley, Thomas M. Martial arts practice device with breakage. 4,583,730, Cl. 272-76.000.
Geier, Gerhard: *See—*
Hansel, Edward; Huber, Hans; Geier, Gerhard; and Seiler, Claus, 4,584,394, Cl. 556-442.000.
Geiler, Volkmar: *See—*
Grabowski, Danuta; Ross, Ludwig; Geiler, Volkmar; Mennemann, Karl; and Gliemeroth, Georg, 4,584,279, Cl. 501-78.000.
Gellert, Jobst U. Method of manufacture of injection molding heated nozzle with brazed in heating element. 4,583,284, Cl. 29-611.000.
Gelzer, John R. Article packaging system. 4,583,641, Cl. 206-330.000.
Gemmill, Robert M.; Horodysky, Andrew G.; and Landis, Phillip S., to Mobil Oil Corporation. Multifunctional lubricant additives and compositions thereof. 4,584,114, Cl. 252-47.500.
Gen, Tamar G.; Biddick, Karen M.; and Hansen, Erling, to Raychem Corporation. Ultrathin chemically resistant marking system and method of producing therefor. 4,584,238, Cl. 428-349.000.
General Dynamics Pomona Division: *See—*
Stankey, John E., 4,584,539, Cl. 331-16.000.
General Electric Company: *See—*
Butman, Thomas R., Jr.; and Schmitt, Nickolas, deceased, 4,584,497, Cl. 310-214.000.
Crivello, James V., 4,584,356, Cl. 525-479.000.
Gajjar, Jagdish T., 4,584,685, Cl. 371-35.000.
Ghezzo, Mario; and Kim, Manjin J., 4,583,281, Cl. 29-576.00W.
Ham, Emmett P., 4,583,386, Cl. 72-92.000.
Harnden, John D., Jr.; Rocha, Henry A. F.; and Bloomer, Milton D., 4,584,525, Cl. 324-126.000.
Hooke, John W.; and Rockett, Danny F., 4,584,250, Cl. 429-97.000.
Komanduri, Ranga; and Reed, William R., Jr., 4,583,431, Cl. 82-1.00C.
Komanduri, Ranga; and Carder, Charles R., 4,584,649, Cl. 364-475.000.
Lee, Gim F., Jr.; and Ting, Sai P., 4,584,334, Cl. 524-151.000.
LeGrand, Donald G.; and Olszewski, William V., 4,583,407, Cl. 73-762.000.
Leskovec, Robert A.; Davenport, John M.; and Burman, Orvar B., 4,584,499, Cl. 310-318.000.
Liu, Ping Y., 4,584,338, Cl. 524-504.000.
Lozar, Boris, 4,583,854, Cl. 356-237.000.
Pressman, Eric J.; and Willey, Paul R., 4,584,416, Cl. 568-727.000.
Talley, John J.; and Berman, Carol B., 4,584,332, Cl. 524-122.000.
Talley, John J., 4,584,417, Cl. 568-799.000.
Taub, Alan I.; and Frischmann, Peter G., 4,584,036, Cl. 148-120.000.
Thornton, Roy F., 4,584,547, Cl. 335-216.000.
Tiemann, Jerome J.; and Vogelsong, Thomas L., 4,584,657, Cl. 364-602.000.
Webb, Jimmy L., 4,584,388, Cl. 549-241.000.
Webb, Jimmy L.; and Olsen, Cathryn E., 4,584,393, Cl. 556-407.000.
Wilson, Patricia A.; Stackhouse, Kenneth B.; Chakraborty, Sujit; Ching, Walter S.; Hill, William D.; Knepp, John B.; Ward, James P.; and Zediker, Warren L., 4,584,165, Cl. 376-216.000.
Wilson, Ronald H., 4,584,207, Cl. 427-124.000.
General Electrodynamics Corporation: *See—*
Menon, Narandranath, 4,583,606, Cl. 177-208.000.
General Foods France: *See—*
Boudy, Francois, 4,583,408, Cl. 73-840.000.
General Motors Corporation: *See—*
Sigety, Stephen, Jr., 4,584,634, Cl. 362-275.000.
Genestie, Paul, to Saint-Gobain Emballage. Process for purifying recovery glass. 4,583,695, Cl. 241-24.000.
Genex Corporation: *See—*
Finkelman, Malcolm A. J.; and Yang, Huei-Hsuing, 4,584,273, Cl. 435-232.000.
Vollmer, Patricia J.; Schruben, Jeffrey J.; Montgomery, John P.; and Yang, Huei-Hsuing, 4,584,269, Cl. 435-108.000.
Genna, Sebastian; and Pang, Sing-Chin, to Digital Scintigraphics, Inc. Radionuclide annular single crystal scintillator camera with rotating collimator. 4,584,478, Cl. 250-363.00S.
Genovese, Joseph E., to United Technologies Corporation. Heater protection of thrusters. 4,583,361, Cl. 60-39.462.
Geoffroy, Robert O.: *See—*
Hines, Marion E.; Bielawa, Robert J.; and Geoffroy, Robert O., 4,583,556, Cl. 128-804.000.
Geometrics, Inc.: *See—*
McDaniel, James E.; and Smith, Kenneth R, 4,584,560, Cl. 340-347.0AD.
Geophysical Engineering Company: *See—*
Assaf, Gad, 4,583,370, Cl. 60-688.000.
Gerhardt, Hans-Joachim: *See—*
Kramer, H. Carl B.; and Gerhardt, Hans-Joachim, 4,583,337, Cl. 52-302.000.
Gerking, Luder; and Taurat, Dieter O., to Karl Fischer Industrieanlagen GmbH. Process for the crystallizing, drying and aftercondensation of polycondensates. 4,584,366, Cl. 528-502.000.
Germane, Geoff J.; and Hess, Gary L., to Angus Chemical Company. Nitromethane fuel compositions. 4,583,991, Cl. 44-72.000.
Getson, John C.: *See—*
Pate, Michelle; and Getson, John C., 4,584,336, Cl. 524-443.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Breuer, Oswald; Merten, Gerhard; Steinkuhl, Bernd; and Rassmann, Christoph, 4,583,785, Cl. 299-34.000.
Geyssel, Jurgen. Device for attaching articles to packages, bottles and other objects. 4,584,046, Cl. 156-358.000.
GEZE GmbH: *See—*
Storz, Regina; Feucht, Fritz; and Storandt, Ralf, 4,583,324, Cl. 49-367.000.
Ghezzo, Mario; and Kim, Manjin J., to General Electric Company. Method of making an integrated circuit. 4,583,281, Cl. 29-576.00W.
Ghisu, Giuseppe: *See—*
Nistri, Ugo; Baroffio, Romano; and Ghisu, Giuseppe, 4,583,698, Cl. 242-56.00R.
Giannetti, Vittorio. Hearing aids of the type intended to be fitted in the external auditory meatus of the user. 4,584,437, Cl. 179-107.00E.
Gilbert Apparel Group, Inc.: *See—*
Flanagan, Cherrie; and Gilbert, Arnold I., 4,583,544, Cl. 128-482.000.
Gilbert, Arnold I.: *See—*
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Gill, Devinder S.: *See—*
Rosenberg, Barnett; and Gill, Devinder S., 4,584,316, Cl. 514-492.000.
Gillam, Paul T., to Molex Incorporated. Packaging arrangement for electrical connectors. 4,583,640, Cl. 206-328.000.
Gillette Company, The: *See—*
Nelson, Robert E., 4,584,426, Cl. 136-253.000.
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., to Schering Corporation. Process for the production of penems. 4,584,133, Cl. 260-245.20R.
Girling, Peter M., to International Coal Refining Company. Temperature differential detection device. 4,583,868, Cl. 374-114.000.
Gliemeroth, Georg: *See—*
Grabowski, Danuta; Ross, Ludwig; Geiler, Volkmar; Mennemann, Karl; and Gliemeroth, Georg, 4,584,279, Cl. 501-78.000.
Gliha, Edward R., Jr., to Allied Corporation. Hermetically sealed filter connector. 4,583,810, Cl. 339-147.00R.
GNB Batteries Inc.: *See—*
Schaumburg, Edward G.; Recht, Peter A.; and Frich, Mark R., 4,583,286, Cl. 29-730.000.
Goel, Anil; and Tufts, Timothy, to Ashland Oil, Inc. Thermoset resins based on bicyclic amide acetal modified unsaturated polycarboxylic acids, polyisocyanates and vinyl monomers. 4,584,363, Cl. 528-73.000.
Goeppinger, Edward J.: *See—*
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Gold, Elijah H.: *See—*
Doll, Ronald J.; Neustadt, Bernard R.; Smith, Elizabeth M.; Magatti, Charles V.; and Gold, Elijah H., 4,584,285, Cl. 514-19.000.
Goldberg, James R. Safety closure device. 4,583,652, Cl. 215-256.000.
Goldberg, Joshua I.; Lardiere, Benjamin G., Jr.; McCoy, Bruce E.; and Riter, John J., Jr., to Dataproducts New England, Inc. Cordless communications system. 4,584,707, Cl. 455-41.000.
Goldhaber, Richard P.: *See—*
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Goldstein, Arthur L.; Haber, Edgar; and Mandle, Robert J., to Ionics Incorporated. Process and apparatus for electrically desorbing components selectively sorbed on an electrolytically conducting barrier. 4,584,075, Cl. 204-182.300.
Goldstein, Gideon: *See—*
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Gomi, Hiromi: *See—*
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Goodley, Paul H.; and Shemet, Alexander M. Orthopedic lumbar apparatus. 4,583,533, Cl. 128-75.000.
Goodrich, Judson E., to Chevron Research Company. Method for producing industrial asphalts without air-blowing using phytic acid. 4,584,023, Cl. 106-273.00R.
Gordon, Merrill K., Jr. Heat recovery apparatus and heat recovery method. 4,583,494, Cl. 122-20.00B.
Gordon, Norman E.: *See—*
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Gordon, Robert L.; Bodary, Michael; and Alba, Andrew J., to International Paper Company. Serving container with paperboard base plate. 4,583,680, Cl. 229-45.00R.
Goschke, Richard: *See—*
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Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft: *See*—
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Grabowski, Danuta; Ross, Ludwig; Geiler, Volkmar; Mennemann, Karl; and Gliemeroth, Georg, to Schott Glaswerke. Optical glass with refractive indices > 1.90, Abbe numbers > 25 and high chemical stability. 4,584,279, Cl. 501-78.000.
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Winckler, Lothar; Fuhrmann, Klaus; Graeser, Ulrich; and Wenning, Peter, 4,584,060, Cl. 201-32.000.
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Grammerstorff, Michael; and Pietruschka, Hans, to International Business Machines Corporation. Apparatus for automatic optical property testing. 4,583,857, Cl. 356-375.000.
Granek, Herman; Granek, Murry; and Church, John, to Bio-Stimu Trend Corp. Garment apparatus for delivering or receiving electric impulses. 4,583,547, Cl. 128-639.000.
Granek, Murry: *See*—
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Graves, J. W.; Tate, Harold, Jr.; and Cook, John U. Horticultural apparatus for rotating potted plants and hanging baskets. 4,583,323, Cl. 47-67.000.
Graves, Joseph R. Solar system clock. 4,583,864, Cl. 368-17.000.
Gray, Alan; and Miller, William S., to Alcan International Limited. Aluminium alloys. 4,584,173, Cl. 420-533.000.
Gray, Thomas J.; Masse, Norman G.; Huang, Tai-Nang; and Morgan, Michael J., to Olin Corporation. Hydrogenation of long chain olefinic oils with Raney catalyst. 4,584,139, Cl. 260-409.000.
Greacen, John S., to Combustion Engineering, Inc. Tooling system for remote load positioning. 4,584,166, Cl. 376-260.000.
Greene, Harry E. Carburetion apparatus. 4,583,511, Cl. 123-545.000.
Greenlee, Donald R.; Dearing, David G.; and Tucker, Andrew J., to Dresser Industries, Inc. Slip releasing apparatus. 4,583,590, Cl. 166-216.000.
Greer, Richard L., to Hytech International, Inc. Roller reamer with rotatably positioned bearing block. 4,583,604, Cl. 175-346.000.
Greeves, Godfrey; and Lakra, Paul, to Lucas Industries public limited company. Engine system. 4,583,507, Cl. 123-425.000.
Gregor, Harry P.: *See*—
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Gretz, Ronald D.: *See*—
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Griner, Ralph R.: *See*—
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Griswold, Harrison R., to United Technologies Corporation. Scavenging apparatus for life support suit helmet. 4,583,246, Cl. 2-2.10A.
Griswold, Roy M.; and Martin, Eugene R., to SWS Silicones Corporation. Antifoam compositions. 4,584,125, Cl. 252-358.000.
Groger, Klaus: *See*—
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Gronert, Heinz; Eckert, Manfred; Munich, Johann; von Petersdorff, Henning; Mix, Manfred; and Radtke, Wulf, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Heat exchanger. 4,583,519, Cl. 126-418.000.
Gross, Robert E., Jr.; Heck, Teresa K.; Sturner, William P.; and Yeow, Yew-Thye, to AMP Incorporated. Electrical contact with assist spring. 4,583,812, Cl. 339-259.00R.
Gross, Wilhelm: *See*—
Ebbinghaus, Wilfried; Henze, Erwin; and Gross, Wilhelm, 4,583,622, Cl. 188-79.50K.
Grosse, Eric F. Food holder for barbecue rotisserie. 4,583,452, Cl. 99-427.000.
Grossman, Arthur, to Charles Stark Draper Laboratory, Inc., The. Heat exchanger system. 4,583,582, Cl. 165-32.000.
Grote & Hartmann GmbH & Co. KG: *See*—
Mantlik, Konrad, 4,583,805, Cl. 339-61.00R.
Gruebl, Ernst: *See*—
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Grumman Aerospace Corporation: *See*—
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Grundland, Nathan. Multi-bit arithmetic logic units having fast parallel carry systems. 4,584,661, Cl. 364-787.000.
Gruodis, Victor, to Neris Coal Export Co., Inc. Incremental touch-operated switch. 4,584,519, Cl. 323-245.000.
Grutzner, Gunter, to Mannesmann Aktiengesellschaft. Using a corrosion proof austenitic alloy for high load weldable components. 4,584,031, Cl. 148-12.00E.
GTE Communication Systems Corporation: *See*—
Beeman, Robert H.; and Lind, Paul U., 4,584,696, Cl. 375-99.000.
Bernardson, Peter S., 4,584,561, Cl. 340-347.0DA.
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GTE Laboratories Incorporated: *See*—
Chen, Yung-Jui; Carter, Gary M.; and McNeill, William H., 4,583,818, Cl. 350-96.190.
Feuersanger, Alfred E.; and Drummey, James P., Jr., 4,584,454, Cl. 219-118.000.
GTE Products Corporation: *See*—
Crosby, John J.; and Napiorkowski, John J., 4,584,622, Cl. 361-56.000.
Douglas, Alan D.; and Reilly, Kenneth T., 4,584,185, Cl. 423-49.000.
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Guest, Graham J., to Dresser Industries, Inc. Liquid spraying. 4,584,000, Cl. 55-73.000.
Guglielmino, Paul. Copyprotecting system for software protection. 4,584,641, Cl. 364-200.000.
Guichard, Jacques. Method for encoding a digital color video signal by rate compression. 4,584,597, Cl. 358-13.000.
Guichard, Jacques; and Poirier, Alain. Process and apparatus for the display of relief moving pictures. 4,584,604, Cl. 358-92.000.
Gumacos, Constantine, to RCA Corporation. Method and apparatus for estimating baud rate. 4,584,694, Cl. 375-75.000.
Gustav Stabernack GmbH: *See*—
Schmitt, Paul, 4,583,705, Cl. 248-174.000.
Gutberlet, Louis C.: *See*—
Unmuth, Eugene E.; and Gutberlet, Louis C., 4,584,089, Cl. 208-65.000.
Gutierrez, Antonio; Brownawell, Darrell W.; Walker, Thad O.; and Brois, Stanley J., to Exxon Research & Engineering Co. Alkylthiomethyl substituted mono-oxazolines. 4,584,386, Cl. 548-237.000.
Guttinger, Heinz: *See*—
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Haas, Raimund; Ohlendorf, Dieter; and Interthal, Werner, to Hoechst Aktiengesellschaft. Method of controlling the mobility of flows through fissures, slits or pores. 4,584,109, Cl. 252-8.55D.
Haber, Edgar: *See*—
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Hageman, William E.; and Zelesko, Michael J., to McNeilab, Inc. Methods for the treatment of ventricular dysrhythmia and prevention of ventricular fibrillation. 4,584,302, Cl. 514-324.000.
Hagiwara, Michiaki; Menju, Akira; Nomura, Kouhachi; and Nakamura, Akio, to Unitika Ltd. Iron-base amorphous alloys having improved fatigue and toughness characteristics. 4,584,034, Cl. 148-31.000.
Hagmann, Peter: *See*—
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Hale, Robert A., to SI Handling Systems, Inc. Driverless vehicle for two way accumulation. 4,583,462, Cl. 104-48.000.
Hales, James W., to Combustion Engineering, Inc. Dynamic torque monitoring device. 4,583,411, Cl. 73-862.090.
Hall, Charles P.: *See*—
Johenning, John B.; and Hall, Charles P., 4,583,254, Cl. 5-451.000.
Hall, Dennis E. Baby sleeper for automobiles. 4,583,253, Cl. 5-94.000.
Hall, George R., II, to Babcock & Wilcox Company, The. Filter cleaning system for opacity monitor. 4,583,859, Cl. 356-438.000.
Hallberg, Lars O., to International Business Machines Corporation. Character recognition system and its use in an optical document reader. 4,584,703, Cl. 382-50.000.
Halliburton Company: *See*—
Cox, Bruce M.; and Pattison, William W., Jr., 4,584,002, Cl. 55-257.0PP.
Sutton, David L., 4,584,327, Cl. 523-130.000.
Zunkel, Gary D.; and Stepp, Lee W., 4,583,593, Cl. 166-382.000.
Halpern, Joseph Y.; Simons, Barbara B.; and Strong, Hovey R., to International Business Machines Corporation. Decentralized synchronization of clocks. 4,584,643, Cl. 364-200.000.

Halstensgaard, Gaylen E.; Henline, John W.; and Loraas, Orlan J., to Clark Equipment Company. Vehicle stabilizer attachment and method. 4,583,760, Cl. 280-766.100.

Ham, Emmett P., to General Electric Company. Method to reduce weld flash. 4,583,386, Cl. 72-92.000.

Hamabe, Kenji: *See*—
Mitsumori, Masahito; Hamabe, Kenji; and Kaneda, Hiroshi, 4,583,926, Cl. 418-137.000.

Hamada, Akiyoshi: *See*—
Nakamura, Hiromu; Ueda, Toshihiko; Hyodo, Haruhiro; Kuroda, Muneo; Hamada, Akiyoshi; Nakauchi, Hiroaki; and Kanai, Nobuo, 4,583,846, Cl. 355-52.000.

Hamada, Kazuhiko; Suzukamo, Gohfu; Masuko, Fujio; and Nakamura, Makoto, to Sumitomo Chemical Co., Ltd. Process for the preparation of hydroxybenzaldehydes. 4,584,410, Cl. 568-436.000.

Hamada, Kenji: *See*—
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Hamano, Saburo: *See*—
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Hametner, Gerhard: *See*—
Hornung, Walter; Hametner, Gerhard; Ackermann, Wolfgang; Benkowitz, Lothar; Hofmann, Peter; Koch, Dieter; and Hemming, Herbert, 4,583,756, Cl. 280-432.000.

Hamilton, Don A.; and Masters, William E. Kayak cockpit cover. 4,583,480, Cl. 114-347.000.

Hamisch, Paul H., Jr.; and Mistyurik, John D., to Monarch Marking Systems, Inc. Labeler. 4,584,048, Cl. 156-384.000.

Hammer, Friederich: *See*—
Hinrichs, Walter; Lange, Ludwig; Hammer, Friederich; and Ludwig, Hans, 4,584,068, Cl. 204-68.000.

Hanaoka, Yuzuru; Murayama, Takeshi; Muramoto, Setsuo; and Matsuura, Tamizo, to Yokogawa Hokushin Electric Corporation. Method for analysis of anions. 4,584,276, Cl. 436-150.000.

Hani, Franz: *See*—
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Hankinson, Michael F., to Westinghouse Electric Corp. Reactor cavity seal ring. 4,584,163, Cl. 376-205.000.

Hannesen, Kurt: *See*—
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Hansel, Edward; Huber, Hans; Geier, Gerhard; and Seiler, Claus, to Dynamit Nobel AG. Alkenylbenzoyloxysilanes and their use in pressure-sensitive adhesives. 4,584,394, Cl. 556-442.000.

Hansen, Albert F. Pipe coupling. 4,583,767, Cl. 285-40.000.

Hansen, Erling: *See*—
Gen, Tamar G.; Biddick, Karen M.; and Hansen, Erling, 4,584,238, Cl. 428-349.000.

Hansen, H. Victor: *See*—
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Hansen, James P., to United States of America, Navy. Coherent receiver phase and amplitude alignment circuit. 4,584,710, Cl. 455-226.000.

Hanson, Gustaf H., to Augusta Developments Inc. Orthodontic devices. 4,583,944, Cl. 433-22.000.

Hanssler, Gerd: *See*—
Holmwood, Graham; Lurssen, Klaus; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,584,373, Cl. 544-225.000.

Hanyu, Susumu; and Koide, Akio, to Janome Sewing Machine Industry Co., Ltd. Presser foot for zigzag sewing machines. 4,583,475, Cl. 112-235.000.

Hara, Shigeo: *See*—
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Harada, Masahide, to Ricoh Company, Ltd. Image control device for electrophotographic copier. 4,583,835, Cl. 355-14.0CH.

Harada, Susumu: *See*—
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Harada, Takeshi: *See*—
Kuga, Kazuhiko; Washita, Hiroshi; Watanabe, Hiroyuki; Kurita, Kohji; and Harada, Takeshi, 4,584,245, Cl. 428-409.000.

Harbridge, John B., to Beecham Group p.l.c. 9-deoxy-9-tetrazolyl-derivatives of clavulanic acid, their preparation and their use. 4,584,291, Cl. 514-210.000.

Harder, Kenneth A. Dump body spreader. 4,583,693, Cl. 239-657.000.

Hardie, Suzanne L.: *See*—
DuVall, John G.; Kirby, Charles E.; and Hardie, Suzanne L., 4,584,203, Cl. 426-549.000.

Harding, Margot J., to Weyerhaeuser Company. Latex treated cationic cellulose product and method for its preparation. 4,584,357, Cl. 525-54.210.

Harding, Ronald H.; and Matlock, Paul L., to Union Carbide Corporation. Method of quenching. 4,584,033, Cl. 148-14.000.

Hardy, Norman, to Key Logic, Inc. Computer security system. 4,584,639, Cl. 364-200.000.

Hargreaves, Edward; and Lewis, Joseph E., to Pilkington Brothers P.L.C. Process for coating glass. 4,584,208, Cl. 427-160.000.

Hargreaves, Rodney B.: *See*—
Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., 4,584,298, Cl. 514-242.000.

Harnden, John D., Jr.; Rocha, Henry A. F.; and Bloomer, Milton D., to General Electric Company. Current-shunt system for known conductors. 4,584,525, Cl. 324-126.000.

Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., to Allied Corporation. Modified polyolefin fiber. 4,584,347, Cl. 525-119.000.

Harris Corporation: *See*—
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Young, William R.; and Hoke, Michael C., 4,584,660, Cl. 364-786.000.

Harris, Donald L., to Cordis Corporation. Telescoping catheter shunt system. 4,583,967, Cl. 604-9.000.

Harris, John. Towel rail clamp. 4,583,269, Cl. 24-495.000.

Harrison, Alan M., to Welwyn Plastics (1955) Limited. Floor covering materials. 4,584,209, Cl. 427-201.000.

Harrison, Elden D. Amusement and information system for use on a passenger carrier. 4,584,603, Cl. 358-86.000.

Hartenstein, Johannes: *See*—
Satzinger, Gerhard; Barth, Hubert; Hartenstein, Johannes; Herrmann, Manfred; Fritschi, Edgar; and Schutt, Ilse-Dore, 4,584,374, Cl. 544-247.000.

Hartmann, Dirck T.: *See*—
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Hartmann, Ludwig A.; and Stephen, John F., to ICI Americas Inc. Synthesis of 2-substituted-5-methyl-pyridines and intermediates therefor. 4,584,380, Cl. 546-250.000.

Hartwig, Jurgen; Jachowski, Johannes; and Pant, Paul, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Process and system for the production of very pure alloys. 4,584,015, Cl. 75-10.00V.

Harvey, Donald M., to Eastman Kodak Company. Pseudo telephoto—pseudo panoramic camera. 4,583,831, Cl. 354-106.000.

Harwood, Neil A., to British Railways Board. Suspension arrangements for four-wheeled railway vehicles. 4,583,464, Cl. 105-171.000.

Hary, Gunter, to Honeywell GmbH. Pneumatic diaphragm actuator with a pneumatic position controller. 4,583,447, Cl. 92-7.000.

Hasegawa, Akira, to Toyota Jidosha Kabushiki Kaisha. Power steering apparatus. 4,583,610, Cl. 180-143.000.

Hasegawa, Hiroshi: *See*—
Yokoi, Koichi; Hasegawa, Hiroshi; Narita, Tadashi; Asaoka, Takemitsu; Kukita, Kenichi; Ishizeki, Seiji; and Nakashima, Toshiaki, 4,584,377, Cl. 546-15.000.

Hasegawa, Yoshii; Tsuruta, Takeshi; Kohgo, Takao; Nakamura, Masahiro; and Kishida, Tohru, to Sumitomo Metal Industries, Ltd. Method for pouring molten metal. 4,583,717, Cl. 266-44.000.

Haselwarter, Klaus: *See*—
Schmidhammer, Ludwig; Dummer, Gerhard; Haselwarter, Klaus; and Strasser, Rudolf, 4,584,123, Cl. 252-188.310.

Hashimoto Corporation: *See*—
Hashimoto, Kazuo, 4,584,434, Cl. 179-2.00A.

Hashimoto, Kazuo, to Hashimoto Corporation. Additional system for automatic information reception terminal device utilizing telephone circuit. 4,584,434, Cl. 179-2.00A.

Hashimoto, Kiyoshi; and Sugawara, Toru, to Tokyo Shibaura Denki Kabushiki Kaisha. Beam direct converter. 4,584,473, Cl. 250-251.000.

Hashimoto, Shinichi: *See*—
Shimono, Mamoru; Hashimoto, Shinichi; and Nishimura, Fuminobu, 4,583,842, Cl. 355-3.0DD.

Hashimoto, Shintaro; Yoshida, Kunio; Morimoto, Masafumi; Morinaga, Hisao; and Yanagiuchi, Shigenobu, to Sharp Kabushiki Kaisha. Word category selection means for electronic translator. 4,584,667, Cl. 364-900.000.

Hashimoto, Tsutomu: *See*—
Ito, Sho; Nakaguchi, Tomoyuki; Kasahara, Kumio; Takei, Toshio; Hashimoto, Tsutomu; and Nakahara, Shojiro, 4,583,733, Cl. 273-26.00R.

Hashimoto, Yoshiaki: *See*—
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Haslett, Robert A.: *See*—
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Hastings, Donald R.: *See*—
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Hata, Shunichi; Miyata, Makoto; and Kishi, Ichirou, to Matsushita Electric Works, Ltd. Extruder for a fluid material. 4,583,934, Cl. 425-376.00R.

Hataishi, Osamu: *See*—
Takaoka, Matsuo; Sasaki, Nobuo; Kawamura, Seiichiro; and Hataishi, Osamu, 4,584,025, Cl. 148-1.500.

Hatch, Frederick R., to Mather Company, The. Seal assembly for a vehicle air conditioning compressor. 4,583,749, Cl. 277-152.000.

Hatsutta, Susumu; and Furukawa, Toshio, to Tachikawa Spring Co., Ltd. Motor vehicle seat. 4,583,781, Cl. 297-284.000.

Hattori, Masaichi; Hara, Shigeo; and Manabe, Shunichi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Switch for power windows. 4,584,546, Cl. 335-186.000.

Hattori, Michihiro: *See*—
Tejima, Tohru; Nakamura, Koichi; Hattori, Michihiro; Masuda, Shinichi; Imokawa, Genji; and Takaishi, Naotake, 4,584,190, Cl. 424-59.000.

Hattori, Shintaroo: *See*—
Fujii, Tsunenori; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Koto, Kaoru; Ohmori, Hideki; Yokokura, Hisao; Okabe, Yoshiaki; Hattori, Shintaroo; Kitamura, Teruo; Mukoh, Akio; and Sato, Mikio, 4,584,120, Cl. 252-299.630.

Hauel, Norbert: *See*—
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Hauser, Robert F.: *See—*
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Hawk, Charles W.: *See—*
Bogart, John D.; and Hawk, Charles W., 4,584,102, Cl. 210-610.000.

Hawkins, Alfred J., to Irrometer Company, Inc. Suction pump. 4,583,925, Cl. 417-555.00R.

Hayakawa, Nobuhiro; Yamada, Masahiko; and Ishihara, Toshiyuki, to NGK Spark Plug Co., Ltd. Device for detecting concentration of oxygen in exhaust gas. 4,584,086, Cl. 204-429.000.

Hayashi, Masaharu; and Itakura, Masato, to Aisin Seiki Kabushiki Kaisha. Temperature responsive fluid coupling device. 4,583,625, Cl. 192-58.00A.

Hayashi, Torahiko. Apparatus for producing strip of dough having constant dimensions and flow rate. 4,583,930, Cl. 425-148.000.

Hayworth, Hubert O.: *See—*
Metz, Werner A., Jr.; and Hayworth, Hubert O., 4,584,027, Cl. 148-1.500.

Hazar, Mitchell M., to Hazco Development Inc. Custom dentures and method of making same. 4,583,947, Cl. 433-171.000.

Hazco Development Inc.: *See—*
Hazar, Mitchell M., 4,583,947, Cl. 433-171.000.

Hazeltine Corporation: *See—*
Dennis, Paul S., Jr.; Kowalski, Anthony M.; and Weiner, Michael, 4,584,583, Cl. 343-380.000.

Hazendonk, Teunis J.; Klinkhamer, Arend J.; Beck, Gerard A.; and Smit, Theodorus F., to U.S. Philips Corporation. Four-phase charge-coupled device having an oversized electrode. 4,584,697, Cl. 377-60.000.

Heartness, Olaf A. Partial vacuum stabilizer for dental prosthesis. 4,583,949, Cl. 433-185.000.

Heavner, George: *See—*
Audhya, Tapan; Kroon, Daniel J.; Heavner, George; and Goldstein, Gideon, 4,584,284, Cl. 514-18.000.

Heberlein Hispano S.A.: *See—*
Vignon, Louis, 4,583,355, Cl. 57-5.000.

Heck, Teresa K.: *See—*
Gross, Robert E., Jr.; Heck, Teresa K.; Sturner, William P.; and Yeow, Yew-Thye, 4,583,812, Cl. 339-259.00R.

Heckenbach, Terry A.: *See—*
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Hedge, Roger W., to British-American Tobacco Company Limited. Reordering of tobacco. 4,583,559, Cl. 131-304.000.

Heider, Joachim: *See—*
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Heinemann Electric Company: *See—*
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Held, Robert P., to Du Pont de Nemours, E. I., and Company. Process for etching nonphotosensitive layer under washoff photopolymer layer. 4,584,261, Cl. 430-294.000.

Held, Wayne L. Chlorinator and method. 4,584,106, Cl. 210-754.000.

Hemmer, Valentine J., to Allied Corp. Method for making contact assembly for an electrical connector. 4,583,290, Cl. 29-874.000.

Hemming, Herbert: *See—*
Hornung, Walter; Hametner, Gerhard; Ackermann, Wolfgang; Benkowitz, Lothar; Hofmann, Peter; Koch, Dieter; and Hemming, Herbert, 4,583,756, Cl. 280-432.000.

Henin, Jean-Pierre: *See—*
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Henkel Kommanditgesellschaft auf Aktien: *See—*
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Schneider, Werner; and Sustmann, Scarlet, 4,583,980, Cl. 604-359.000.

Henley, Ernest J. Fluidized bed apparatus for treating equine body parts. 4,583,530, Cl. 128-65.000.

Henline, John W.: *See—*
Halstensgaard, Gaylen E.; Henline, John W.; and Loraas, Orlan J., 4,583,760, Cl. 280-766.100.

Henttonen, Martti W. Cultivation plant and use thereof. 4,583,880, Cl. 405-36.000.

Henze, Erwin: *See—*
Ebbinghaus, Wilfried; Henze, Erwin; and Gross, Wilhelm, 4,583,622, Cl. 188-79.50K.

Herbert, Paul F.; and Rackley, Robert L., to Du Pont de Nemours, E. I., and Company. Coextruded monofilament fishline. 4,584,240, Cl. 428-373.000.

Hercules Incorporated: *See—*
Leipold, Dianne P., 4,584,189, Cl. 424-54.000.
Tom, Glenn M., 4,584,425, Cl. 585-827.000.

Herman, David E.: *See—*
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Hermant, Marc; Basset, Dominique; and Razet, Jean-Claude, to Atochem. Lubricant compositions containing calcium and barium fluorides. 4,584,116, Cl. 252-51.000.

Hernandez, Orlando, to Florida Energy Control Corp. Air conditioning monitoring device. 4,583,682, Cl. 236-46.00R.

Heron, J. Richard, to FranRica Mfg. Inc.; and Container Technologies, Inc. Apparatus and methods for automaticaly handling aseptic fitmentless pouch. 4,583,352, Cl. 53-570.000.

Herr, Ernest A. Timed pulse communication system. 4,584,691, Cl. 375-22.000.

Herrmann, Manfred: *See—*
Satzinger, Gerhard; Barth, Hubert; Hartenstein, Johannes; Herrmann, Manfred; Fritschi, Edgar; and Schutt, Ilse-Dore, 4,584,374, Cl. 544-247.000.

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Hesse, Karl-Heinz; Liermann, Peter; and Neuhaus, Detlev, to WABCO Westinghouse Fahrzeugbremsen GmbH. Vehicle control arrangement for monitoring and controlling a plurality of vehicle components. 4,584,487, Cl. 307-10.00R.

Hettiger, James, to RCA Corporation. Bandswitched interstage coupling network including a high side coupled capacitor. 4,584,544, Cl. 333-174.000.

Hewlett-Packard Company: *See—*
La Barre, Marcus A.; Trask, Jeffrey L.; and Archibald, Roger D., 4,583,660, Cl. 222-1.000.
Raugh, Michael R., 4,583,298, Cl. 33-502.000.
You, Young S., 4,583,690, Cl. 239-690.000.

Hickson, Donald A.: *See—*
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Higashino, Shigenori; Shikano, Yoshiro; and Katsuki, Kanji, to Mitsubishi Denki Kabushiki Kaisha. Circuit for transmitting energy to and from coils. 4,584,518, Cl. 323-224.000.

Higuchi, Fuminori: *See—*
Namba, Hirokuni; Osaka, Hajime; Kamon, Koichi; and Higuchi, Fuminori, 4,584,053, Cl. 156-603.000.

Higuchi, Seizun; Asakawa, Kenichi; and Okada, Nobuyoshi, to Nippon Steel Corporation. Continuous hot dip aluminum coating method. 4,584,211, Cl. 427-320.000.

Hill, Richard C.; Kasper, Richard; Radley, David J.; and Pete, Arthur R., to University of Maine, Board of Trustees of the. Wood fired quick recovery water heater. 4,583,495, Cl. 122-251.000.

Hill, William D.: *See—*
Wilson, Patricia A.; Stackhouse, Kenneth B.; Chakraborty, Sujit; Ching, Walter S.; Hill, William D.; Knepp, John B.; Ward, James P.; and Zediker, Warren L., 4,584,165, Cl. 376-216.000.

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Hills Industries Limited: *See—*
Brown, John A. S., 4,583,649, Cl. 211-183.000.

Hilton, James; and Crosby, Joel S., to Hilton, James. Fireplace screen. 4,583,517, Cl. 126-135.000.

Hines, Marion E.; Bielawa, Robert J.; and Geoffroy, Robert O., to M/A-Com, Inc. Microwave applicator/receiver apparatus. 4,583,556, Cl. 128-804.000.

Hines, William W., to Northern Telecom Limited. Station protector for telecommunications systems. 4,584,624, Cl. 361-119.000.

Hingarh, Hemraj K.: *See—*
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Hinrichs, Walter; Lange, Ludwig; Hammer, Friederich; and Ludwig, Hans, to Degussa Aktiengesellschaft. Device and process for the fused-salt electrolysis of alkali metal halides. 4,584,068, Cl. 204-68.000.

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Hirano, Hiroyuki: *See—*
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Hirano, Seiichi: *See—*
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Hirano, Takashi, to Yamato Scale Company, Limited. Zero-point correction device for weighing machine. 4,583,605, Cl. 177-50.000.

Hirao, Kazuhiro: *See—*
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Hirosaki, Yukihiro; Nishida, Manabu; and Sekioka, Kunikazu, to Tokyo Electric Co., Ltd. Automatic packaging, measuring and pricing machine. 4,583,345, Cl. 53-77.000.

Hirose, Masuhiko; and Akao, Mutsuo, to Fuji Photo Film Co., Ltd. Wrapping materials for photographic materials. 4,584,234, Cl. 428-323.000.

Hirose, Setsuko: *See—*
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Hirose, Takeshi; Nakamura, Kotaro; and Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,584,266, Cl. 430-555.000.

Hirose, Yasuo, to Nippon Furnace Kogyo Co., Ltd. Ash disposer for system to recover resources from sludge. 4,583,470, Cl. 110-346.000.

Hirota, Toyokazu: *See—*
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Hisada, Yoji; Sasamoto, Koichi; Ichinose, Masao; Utaka, Osamu; and Nakayama, Seiya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha.

Process for producing pregelatinized potato starch for use as a binder in feeds for fish. 4,584,024, Cl. 127-66.000.
Hitachi Cable Limited: *See*—
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Fujii, Tsunenori; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Koto, Kaoru; Ohmori, Hideki; Yokokura, Hisao; Okabe, Yoshiaki; Hattori, Shintaroo; Kitamura, Teruo; Mukoh, Akio; and Sato, Mikio, 4,584,120, Cl. 252-299.630.
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Hitchins, William G. Gable overhang. 4,583,332, Cl. 52-73.000.
Hoashi, Kenzo; Morita, Koichi; and Matsuda, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Hydrostatic drive arrangement. 4,583,371, Cl. 60-426.000.
Hobart Corporation: *See*—
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Petrzilka, Martin; and Schadt, Martin, 4,583,826, Cl. 350-350.00R.
Hofman, Hendrik, to Aannemingsbedrijf Luymes & Bal en van der Straaten B.V. Paving method and grab for use in said method. 4,583,879, Cl. 404-73.000.
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Holland, Lawrence R., to Research Corporation. Solids refining process. 4,584,054, Cl. 156-609.000.
Hollow, Richard H., to United States of America, National Aeronautics and Space Administration. Thumb-actuated two-axis controller. 4,584,510, Cl. 318-584.000.
Hollowood, John, to Fine Organics Limited. Preparation of thiazolidine derivatives. 4,584,407, Cl. 564-487.000.
Holmgren, Holger; and Wadling, Bo, to Inter-Ikea AG. Method of testing construction units within the furniture field with associated environments in their normally used assembled state and an apparatus to be used by the method. 4,583,392, Cl. 73-7.000.
Holmwood, Graham; Lurssen, Klaus; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, to Bayer Aktiengesellschaft. 1-(substituted-phenoxy)-3-methyl-2-(pyrimidin-5-yl)-butan-2-ol useful as plant growth regulating agents. 4,584,373, Cl. 544-225.000.
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Mitsumori, Masahito; Hamabe, Kenji; and Kaneda, Hiroshi, 4,583,926, Cl. 418-137.000.
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Honda, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Image recording apparatus with separable upper and lower sections and displaceable paper feed unit. 4,583,844, Cl. 355-3.0SH.
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Carey, John L., Jr.; and Elias, Jack, 4,584,651, Cl. 364-483.000.
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Horcher born Kloss, Heide, 4,583,268, Cl. 24-20.00R.
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Huang, Charles. Multiple-purpose vice for wood working. 4,583,724, Cl. 269-88.000.
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Hughes, Gregory P.: *See*—
LaFiandra, Carlo; and Hughes, Gregory P., 4,584,699, Cl. 378-130.000.
Hughes Tool Company: *See*—
James, Mark C., 4,583,923, Cl. 417-414.000.
Hull, Scott A., to Schlage Lock Company. Reversible latch assembly with integrated function. 4,583,382, Cl. 70-107.000.
Hulseweh, Terry S.; and Casteel, Carroll, to Motorola, Inc. Process for self-aligned buried layer, field guard, and isolation. 4,583,282, Cl. 29-576.00W.
Humber, Leslie G.: *See*—
Mobilio, Dominick; Demerson, Christopher A.; and Humber, Leslie G., 4,584,312, Cl. 514-411.000.
Humphrey, Robert; and Biro, Carl. Viscous fluid timed infusion device. 4,583,973, Cl. 604-135.000.
Hundertmark, James M., to Brunswick Corp. Marine propulsion system with automatic oil-fuel mixing. 4,583,500, Cl. 123-73.0AD.
Hunt, Charles D., to Electro Metals, a division of Demetron, Inc. Continuous casting method and ingot produced thereby. 4,583,580, Cl. 164-469.000.
Hunt, Rowland D.; and Gardner, Kenneth, to Clamshell Partners Ltd. Frame supported structure with tensioned fabric panels. 4,583,331, Cl. 52-2.000.
Hunt, Trevor M.; and Bowns, Desmond E., to Ministry of Defence. Contamination level indicator. 4,583,396, Cl. 73-61.00R.
Hunter, Robert R., III; and Weston, Robert E., to Complex, Inc. Wound evacuator. 4,583,972, Cl. 604-133.000.
Hunziker, Max, to Ciba-Geigy Corporation. Solid electrolyte cell and iodine-doped metal complexes as the cathode material. 4,584,251, Cl. 429-191.000.
Hurlow, Robert H., to Cablecraft, Inc. Two-cable shifting mechanism for transmissions. 4,583,417, Cl. 74-473.00R.
Hutchin, Richard A. Microscope for producing high resolution images without precision optics. 4,584,484, Cl. 250-550.000.
Hutchins, Clinton E.; Rougeau, Derek E.; Chalmers, Thomas E.; and Bemis, Richard A., to Sprague Electric Company. Etching of aluminum electrolytic capacitor foil. 4,584,067, Cl. 204-33.000.
Hutchins, Donald C. Cardiopulmonary resuscitation prompting. 4,583,524, Cl. 128-1.00R.
Hutchins, Walter J.; and Drechsler, Mark A., to Stanley Works, The. Coilable rule housing with discharge slot for dirt and the like. 4,583,294, Cl. 33-138.000.
Hutchison, Marion E., to Tiger Industries, Inc. Apparatus for bottom unloading of storage structures. 4,583,903, Cl. 414-311.000.
Huttunen, Jouko: *See*—
Turunen, Olli; Huttunen, Jouko; Ekman, Kurt; Eklund, Vidar; and Mandell, Leo, 4,583,984, Cl. 8-125.000.
Hwang, David Q.: *See*—
Post, Douglass E., Jr.; Hwang, David Q.; and Hovey, Jane, 4,584,161, Cl. 376-143.000.
Hwang, Jen F. Decoration board for electric wire laid. 4,583,802, Cl. 339-20.000.
Hy-Reel Machinery, Inc.: *See*—
Ridgway, Lance D., 4,583,714, Cl. 254-326.000.
Hylarides, Mark D.; and Mettler, Fred A., Jr., to University of New Mexico. Synthesis of 1-haloestradiols. 4,584,137, Cl. 260-397.500.
Hylsa, S.A.: *See*—
Becerra-Novoa, Jorge O.; Cantu-Hernandez, Francisco; and Martinez-Vera, Enrique R., 4,584,016, Cl. 75-35.000.
Hyodo, Haruhiro: *See*—
Nakamura, Hiromu; Ueda, Toshihiko; Hyodo, Haruhiro; Kuroda, Muneo; Hamada, Akiyoshi; Nakauchi, Hiroaki; and Kanai, Nobuo, 4,583,846, Cl. 355-52.000.
Hyodo, Keiichiro: *See*—
Ohata, Yosuke; and Hyodo, Keiichiro, 4,583,843, Cl. 355-3.0DD.
Hytech International, Inc.: *See*—
Greer, Richard L., 4,583,604, Cl. 175-346.000.
Ibach, Harald: *See*—
Franchy, Rene ; Ibach, Harald; and Bruchmann, Heinz D., 4,584,474, Cl. 250-305.000.
Ichinose, Masao: *See*—
Hisada, Yoji; Sasamoto, Koichi; Ichinose, Masao; Utaka, Osamu; and Nakayama, Seiya, 4,584,024, Cl. 127-66.000.
Ichitani, Takashi: *See*—
Nishimura, Tatsuo; Sugawara, Ryo; Ichitani, Takashi; and Obata, Susumu, 4,584,204, Cl. 426-643.000.
ICI Americas Inc.: *See*—
Hartmann, Ludwig A.; and Stephen, John F., 4,584,380, Cl. 546-250.000.
Idemitsu Kosan Company Limited: *See*—
Katayama, Takao, 4,584,129, Cl. 252-570.000.
Idenawa, Hiroyuki: *See*—
Seko, Nachio; Tani, Tatsuo; Idenawa, Hiroyuki; Yano, Takashi; and Nakamura, Isao, 4,583,834, Cl. 355-14.00C.
Igel, Wolfgang: *See*—
Krieger, Eberhard; Schulz, Gunter; and Igel, Wolfgang, 4,583,358, Cl. 57-281.000.
Iijima, Takeo; Shitara, Mototaka; Sumikawa, Seiji; and Saito, Susumu, to Diesel Kiki Co., Ltd. Swash plate type compressor improved with elongated and tortuous input and output passage systems. 4,583,922, Cl. 417-269.000.
Iinuma, Kazuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for observing blood flow patterns. 4,583,552, Cl. 128-663.000.
Iizuka, Hisao; and Kajioka, Hiroshi, to Hitachi Cable Limited. Single-polarization fiber optics magnetic sensor. 4,584,470, Cl. 250-231.00R.
Iizuka, Yutaka: *See*—
Matsuo, Tadashi; Iizuka, Yutaka; and Sato, Koei, 4,584,367, Cl. 534-634.000.
Ikeda, Tadashi: *See*—
Takeuchi, Teruaki; Suzuki, Ryo; Kodama, Naoki; Takeshita, Masatoshi; Ikeda, Tadashi; Sato, Toshihiro; and Sugita, Yutaka, 4,584,668, Cl. 365-36.000.
Illbruck GmbH Schaumstofftechnik: *See*—
Frank, Werner; and Irregeher, Josef F., 4,584,232, Cl. 428-247.000.
Illinois Tool Works Inc.: *See*—
Diener, Walter C., 4,583,271, Cl. 29-90.00B.
Sygnator, Henry A., 4,583,898, Cl. 411-387.000.
Ima, Seiichiro: *See*—
Kakugo, Masahiro; Fukui, Yoshiharu; Wakatsuki, Kizuku; Ima, Seiichiro; and Kimura, Junichi, 4,584,239, Cl. 428-349.000.
Imahori, Kazutomo; Nakajima, Hiroshi; and Nagata, Kazuhiko, to Unitika Ltd.; Kenkyusho, Rikagaku; and Imahori, Kazutomo. Adenylate kinase and process for the production thereof. 4,584,272, Cl. 435-194.000.
Imai, Seigo: *See*—
Machida, Yoshihiro; Itoi, Isamu; Imai, Seigo; and Inui, Kozo, 4,583,838, Cl. 355-102.000.
Imaizumi, Toshimasa: *See*—
Nakajima, Noriaki; Imaizumi, Toshimasa; and Anzai, Kazuhiro, 4,583,796, Cl. 312-214.000.
Imokawa, Genji: *See*—
Tejima, Tohru; Nakamura, Koichi; Hattori, Michihiro; Masuda, Shinichi; Imokawa, Genji; and Takaishi, Naotake, 4,584,190, Cl. 424-59.000.
Imperial Chemical Industries PLC: *See*—
Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., 4,584,298, Cl. 514-242.000.
Roberts, Gareth G.; and Twigg, Martyn V., 4,584,235, Cl. 428-333.000.
Ina, Hirohiko: *See*—
Yoshino, Tsunemi; Taniguchi, Toshihiko; and Ina, Hirohiko, 4,584,477, Cl. 250-351.000.
Inco Alloys International, Inc.: *See*—
Smith, Gaylord D.; Brown, Douglas S.; Bernstein, Philip; and Weller, John E., 4,584,392, Cl. 556-137.000.
Industria Macchine Automatiche - S.p.A.: *See*—
Argazzi, Ivo, 4,583,965, Cl. 493-313.000.
Industrie Pirelli S.p.A.: *See*—
Tangorra, Giorgio, 4,583,621, Cl. 188-67.000.
Ing. h.c.F. Porsche A.G.: *See*—
Muller, Robert, 4,583,416, Cl. 74-467.000.
Ingersoll-Rand Company: *See*—
Keith, Jeffrey S., 4,583,919, Cl. 417-228.000.
Ingle, Edwin C.: *See*—
Chance, Christopher P.; Coble, Ralph P., Jr.; Ingle, Edwin C.; and Jones, Joye A., 4,584,441, Cl. 179-170.200.
Inoue-Japax Research Incorporated: *See*—
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Inoue, Kiyoshi, 4,584,451, Cl. 219-69.00W.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of preparing a machining fluid for electroerosion. 4,584,450, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Wire EDM with guide member changer. 4,584,451, Cl. 219-69.00W.
Inoue, Naoyuki: *See*—
Fujimoto, Masakazu; and Inoue, Naoyuki, 4,583,586, Cl. 165-95.000.
Inoue, Yuji; Iwaoka, Hideto; and Sugiyama, Tadashi, to Yokogawa Hokushin Electric Corporation; and Yokogawa Medical Systems, Limited. Magnetic field generating coil assembly for nuclear magnetic resonance imaging apparatus. 4,584,548, Cl. 335-299.000.
Institut Francais du Petrole: *See*—
Bre, Anne; Mollard, Marc; and Osgan, Maseh, 4,584,215, Cl. 428-36.000.
Institute po Metaloznanie i Technologia na Metalite: *See*—
Mintchev, Pavel M.; Angelov, Mihail H.; Hristov, Hristomir D.; Balinov, Stoimen S.; and Yordanov, Nikolay V., 4,583,673, Cl. 228-37.000.
Instruments S.A.: *See*—
Flamand, Jean; Gacoin, Philippe; and Laude, Jean-Pierre, 4,583,820, Cl. 350-96.190.
Intel Corporation: *See*—
Schutz, Joseph D.; and Kung, Roger L., 4,584,672, Cl. 365-203.000.
Sharp, Patrick O., 4,584,492, Cl. 307-475.000.

Inter-Ikea AG: *See—*
Holmgren, Holger; and Wadling, Bo, 4,583,392, Cl. 73-7.000.
International Business Machines Corporation: *See—*
Beausoleil, William F., 4,584,574, Cl. 340-744.000.
Brown, William W., Jr.; Curry, Wayne J.; Dahlke, Gerhard P.; Lupul, Francis T.; and Totta, Paul A., 4,583,488, Cl. 118-500.000.
Grammerstorff, Michael; and Pietruschka, Hans, 4,583,857, Cl. 356-375.000.
Hallberg, Lars O., 4,584,703, Cl. 382-50.000.
Halpern, Joseph Y.; Simons, Barbara B.; and Strong, Hovey R., 4,584,643, Cl. 364-200.000.
Larner, Adrian, 4,584,644, Cl. 364-200.000.
MacInnis, Alexander G.; and Nunnery, William B., 4,584,635, Cl. 363-25.000.
Moynihan, Martin D.; and Williams, Thomas A., 4,584,669, Cl. 365-95.000.
Parks, Harville M.; Sobey, Philip W.; and Wilson, Bilson J., Jr., 4,583,873, Cl. 400-629.000.
Shah, Siddharth R.; Singh, Shanker; and Singh, Vijendra P., 4,584,682, Cl. 371-10.000.
Singh, Shanker; and Singh, Vijendra P., 4,584,681, Cl. 371-10.000.
International Coal Refining Company: *See—*
Girling, Peter M., 4,583,868, Cl. 374-114.000.
International Flavors & Fragrances Inc.: *See—*
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,584,409, Cl. 568-420.000.
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,584,128, Cl. 252-522.00R.
International Hydron Corporation: *See—*
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International Paper Company: *See—*
Gordon, Robert L.; Bodary, Michael; and Alba, Andrew J., 4,583,680, Cl. 229-45.00R.
Weimer, Charles P., Jr., 4,583,678, Cl. 229-39.00R.
International Standard Electric Corporation: *See—*
Sterling, Henley F.; Bush, Eric L.; and Alexander, John H., 4,584,074, Cl. 204-181.100.
Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
Paulitz, Bernhard G. A.; Segers, Jacobus C.; and Spits, Albert J., 4,584,141, Cl. 260-420.000.
Interthal, Werner: *See—*
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Inui, Kozo: *See—*
Machida, Yoshihiro; Itoi, Isamu; Imai, Seigo; and Inui, Kozo, 4,583,838, Cl. 355-102.000.
Inuzuka, Tokushige: *See—*
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Ionics Incorporated: *See—*
Goldstein, Arthur L.; Haber, Edgar; and Mandle, Robert J., 4,584,075, Cl. 204-182.300.
Ireland, Frank E. Tuneable antenna with inductive coupling at input. 4,584,587, Cl. 343-745.000.
Irregeher, Josef F.: *See—*
Frank, Werner; and Irregeher, Josef F., 4,584,232, Cl. 428-247.000.
Irrometer Company, Inc.: *See—*
Hawkins, Alfred J., 4,583,925, Cl. 417-555.00R.
Iscar Ltd.: *See—*
Wertheimer, Seev, 4,583,887, Cl. 407-116.000.
Ishibashi, Kenichi: *See—*
Itoh, Toshio; Ishiguro, Susumu; Shimada, Fumitake; and Ishibashi, Kenichi, 4,584,391, Cl. 549-464.000.
Ishiguri, Yukio; Takano, Hirotaka; and Funaki, Yuji, to Sumitomo Chemical Company, Limited. Fungicidal compositions containing mixtures of a substituted triazole-1-penten-3-ol compound with other fungicides such as tetrachloroisophthalonitrile. 4,584,309, Cl. 514-383.000.
Ishiguro, Susumu: *See—*
Itoh, Toshio; Ishiguro, Susumu; Shimada, Fumitake; and Ishibashi, Kenichi, 4,584,391, Cl. 549-464.000.
Ishihara, Toshiyuki: *See—*
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Ishimura, Koichi: *See—*
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Ishizeki, Seiji: *See—*
Yokoi, Koichi; Hasegawa, Hiroshi; Narita, Tadashi; Asaoka, Takemitsu; Kukita, Kenichi; Ishizeki, Seiji; and Nakashima, Toshiaki, 4,584,377, Cl. 546-15.000.
Ishizuka, Hiroshi. Method for production of refractory metal from a chloride thereof. 4,584,018, Cl. 75-84.500.
Iso, Tadashi: *See—*
Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,584,300, Cl. 514-225.000.
Isobe, Seiji; and Kaijima, Makoto, to Kabushiki Kaisha Toshiba. Interference signal supressor system. 4,584,712, Cl. 455-273.000.
Isoda, Tetsuo: *See—*
Nakayama, Nobuhiro; Isoda, Tetsuo; Watanabe, Yoichiro; and Aoki, Mitsuo, 4,584,254, Cl. 430-108.000.
Isokawa, Kenji; Namiki, Kunio; and Takahashi, Kenji, to Daido Steel Company Limited. Bolting bar material and a method of producing the same. 4,584,032, Cl. 148-12.00B.
Isover Saint-Gobain: *See—*
Bichot, Bernard; Lemaignen, Henri; and Louis, Bernard, 4,583,697, Cl. 242-55.100.
Israel, Benjamin. Single newspaper vending machine. 4,583,658, Cl. 221-213.000.
Istituto Luso Farmaco d'Italia S.p.A.: *See—*
Manghisi, Elio; and Salimbeni, Aldo, 4,584,321, Cl. 514-722.000.
Itakura, Masato: *See—*
Hayashi, Masaharu; and Itakura, Masato, 4,583,625, Cl. 192-58.00A.
Ito, Matsutaka, to Sharp Kabushiki Kaisha. Combined character and background pattern print control system. 4,584,573, Cl. 340-734.000.
Ito, Sho; Nakaguchi, Tomoyuki; Kasahara, Kumio; Takei, Toshio; Hashimoto, Tsutomu; and Nakahara, Shojiro, to Mitsubishi Denki Kabushiki Kaisha. Baseball bat swing measuring device. 4,583,733, Cl. 273-26.00R.
Itoh, Toshio; Ishiguro, Susumu; Shimada, Fumitake; and Ishibashi, Kenichi, to Toshin Chemical Co. Ltd. Method for the preparation of isosorbide-5-nitrate and sodium isosorbide-5-nitrate hydrate as a precursor thereof. 4,584,391, Cl. 549-464.000.
Itoh, Yoji: *See—*
Kumagai, Naotake; Tatemoto, Minoru; Itoh, Yoji; and Inuzuka, Tokushige, 4,583,503, Cl. 123-192.00R.
Itoi, Isamu: *See—*
Machida, Yoshihiro; Itoi, Isamu; Imai, Seigo; and Inui, Kozo, 4,583,838, Cl. 355-102.000.
ITT Corporation: *See—*
Carter, Nicholas J. R.; Middleton, Francisco A.; and Das, Santanu, 4,584,680, Cl. 370-96.000.
ITT Industries, Inc.: *See—*
Baker, Peotr, 4,584,600, Cl. 358-40.000.
Iwaki, Yoshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Charge display circuit. 4,584,516, Cl. 322-99.000.
Iwamoto, Kazumi: *See—*
Arisawa, Takashi; Maruyama, Yoichiro; Suzuki, Youji; and Iwamoto, Kazumi, 4,584,072, Cl. 204-157.220.
Iwamoto, Masakuni, to Meinan Machinery Works, Inc. Glued laminated wood. 4,584,222, Cl. 428-57.000.
Iwamoto, Mitsunori: *See—*
Takasaki, Takashi; and Iwamoto, Mitsunori, 4,584,197, Cl. 424-95.000.
Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, to Santen Pharmaceutical Co., Ltd. Platelet anti-aggregative- and calcium antagonistic -1,4-benzothiazin-3-one derivatives, compositions, and methods of use therefor. 4,584,300, Cl. 514-225.000.
Iwaoka, Hideto: *See—*
Inoue, Yuji; Iwaoka, Hideto; and Sugiyama, Tadashi, 4,584,548, Cl. 335-299.000.
Iwasaki, Masayuki; Maeda, Minoru; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Photopolymerizable compositions with combined photoinitiators. 4,584,260, Cl. 430-288.000.
Iwase, Nobuo: *See—*
Oodaira, Hiroai; Suzuki, Haruko; Saito, Masayuki; and Iwase, Nobuo, 4,584,456, Cl. 219-121.0LM.
Iwata, Masashi, to Japan Storage Battery Company Limited. Sealed lead-acid secondary cell. 4,584,248, Cl. 429-54.000.
Izaki, Masataka: *See—*
Tokunaga, Tomokazu; Kajino, Jirou; and Izaki, Masataka, 4,583,827, Cl. 350-429.000.
J. I. Case Company: *See—*
Frisbee, Claude M., 4,583,906, Cl. 414-686.000.
Rubenstein, Raymond D., 4,583,788, Cl. 303-7.000.
J&J G.m.b.H.: *See—*
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J. M. Huber Corporation: *See—*
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J. M. Voith GmbH: *See—*
Schiel, Christian; Steiner, Karl; and Flamig, Hans, 4,584,059, Cl. 162-361.000.
J. Strobel & Sohne GmbH & Co.: *See—*
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Jachowski, Johannes: *See—*
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Jackson Jordan, Inc.: *See—*
Jaeggi, Hans P., 4,583,327, Cl. 51-178.000.
Jackson, Theodore A., to Ex-Cell-O Corporation. Armored vehicle with rotatable swing-away turret. 4,583,444, Cl. 89-36.130.
Jackson, Warren M., to Warren M. Jackson, Inc. Flat die thread roller. 4,583,385, Cl. 72-90.000.
Jacob, Eugene E.: *See—*
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Jacobsen, Eric K.: *See—*
Shelangoskie, Donald R.; Brown, Jack H.; Jacobsen, Eric K.; Masterson, Patrick A.; Pierce, Ricky A.; Rogers, Barry A.; and Valentine, Lawrence J., 4,583,336, Cl. 52-250.000.
Jacobson, Sava. Miniature telephone answering device with single head carriage. 4,584,435, Cl. 179-6.030.
Jacquin, Yves: *See—*
Toulhoat, Herve ; Plumail, Jean-Claude; Mercier, Marc; and Jacquin, Yves, 4,584,093, Cl. 208-216.00R.
Jada, Sivananda S.; and Bauer, Jon F., to Manville Sales Corporation. Production of polymer from metal alkoxide and reaction mixture of carboxylic acid and hydroxy compound. 4,584,365, Cl. 528-271.000.
Jaeger: *See—*
Weiss, Mario A., 4,584,554, Cl. 340-59.000.

Jaeggi, Hans P., to Jackson Jordan, Inc. Rail grinding car. 4,583,327, Cl. 51-178.000.

Jahn, William: *See—*
Beck, William R.; Jahn, William; Koltenback, Steven R.; Scharf, Robert M.; and Schwab, Ronald, 4,583,289, Cl. 29-749.000.

Jakal, Karl H.: *See—*
Klages, Horst; Bonatz, Hartmut; Appun, Ernst; Wahnschaffe, Klaus-Dieter; Friedrich, Baldur; and Jakal, Karl H., 4,584,463, Cl. 219-306.000.

Jakobsen, Kjell M.: *See—*
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James, Claude: *See—*
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James, Mark C., to Hughes Tool Company. Bellows latching mechanism for a submersible pump. 4,583,923, Cl. 417-414.000.

Jamison, Conny M.: *See—*
Malcom, Lawrence L.; Daniel, Dale M.; Jamison, Conny M.; and Landesman, Robert E., 4,583,555, Cl. 128-782.000.

Jan, Rong J. Breathing apparatus for underwater swimming or diving. 4,583,536, Cl. 128-201.110.

Janik, Gloria; and Lo, Peter Y. K., to Dow Corning Corporation. Storage stable, one part polyorganosiloxane compositions. 4,584,361, Cl. 528-15.000.

Janome Sewing Machine Co. Ltd.: *See—*
Ebata, Yoshikazu, 4,583,473, Cl. 112-465.000.

Janome Sewing Machine Industry Co., Ltd.: *See—*
Hanyu, Susumu; and Koide, Akio, 4,583,475, Cl. 112-235.000.

Jansen, Jozef, to Elgarden Aktiengesellschaft. Apparatus for connecting dental prostheses. 4,583,948, Cl. 433-181.000.

Janssen, Manfred; Schmidt, Volker; and Bachmann, Theodor, to Janssen, Manfred. Releasable tubular clamps for the connection of cylindrical or profiled tubes. 4,583,773, Cl. 285-382.000.

Janssen, Paul A. J.: *See—*
Brugmans, Josephus; Pollack, William; Janssen, Paul A. J.; and Tripodi, Daniel, 4,584,305, Cl. 514-368.000.

Janssen Pharmaceutica N.V.: *See—*
Brugmans, Josephus; Pollack, William; Janssen, Paul A. J.; and Tripodi, Daniel, 4,584,305, Cl. 514-368.000.

Jansson, Bertil: *See—*
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Japan Atomic Energy Research Institute: *See—*
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Murakami, Yoshio; Obara, Kenjiroh; Abe, Tetsuya; Shimomura, Yasuo; and Shibata, Takemasa, 4,583,394, Cl. 73-40.700.
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Yamanaka, Hidetoshi; Nakai, Katsuyuki; Yuasa, Hisako; and Shida, Keizo, 4,584,136, Cl. 260-397.500.

Japan Spectroscopic Co., Ltd.: *See—*
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Japan Storage Battery Company Limited: *See—*
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Japan Tobacco Inc.: *See—*
Sakai, Takashi; Maeda, Kazuo; Kawabata, Masuo; and Kono, Mituo, 4,583,560, Cl. 131-336.000.

Jarreau, Francois-Xavier; and Koenig, Jean-Jacques, to Etablissements Nativelle S.A. 14-aminosteroid derivatives, application in therapy and process of preparation. 4,584,289, Cl. 514-182.000.

Jaufmann, Franz: *See—*
Kraus, Josef; and Jaufmann, Franz, 4,583,634, Cl. 198-341.000.

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Sheffler, Robert J.; Radice, Michael E.; and Jedzinak, John E., 4,583,692, Cl. 239-405.000.

Jeromin, Lutz: *See—*
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Jewell, George S., to Westinghouse Electric Corp. Position sensing apparatus. 4,583,297, Cl. 33-533.000.

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Kobayashi, Kyoji; Kato, Masaru; Fujisawa, Koichi; Nagamine, Yoshinori; and Nakajima, Fumio, 4,584,508, Cl. 318-483.000.

Jodoin, Raymond C.: *See—*
Schilling, Donald P.; Jodoin, Raymond C.; and Johnston, Joseph E., 4,584,627, Cl. 361-306.000.

Joel, George: *See—*
Thorpe, John D.; and Joel, George, 4,583,786, Cl. 299-81.000.

Johanning, Hermann, to Engelbrecht & Lemmerbrock GmbH & Co. Pneumatic conveyor for grain. 4,583,883, Cl. 406-65.000.

Johenning, John B.; and Hall, Charles P. Low tension waterbed mattress with aesthetic appearance. 4,583,254, Cl. 5-451.000.

John, Frank T., to Hirtle, Georgina C., a part interest. Reticulated electrothermal fluid motor. 4,583,365, Cl. 60-531.000.

Johnk, Robert T.: *See—*
Taylor, Taliaferro H., Jr.; Johnk, Robert T.; and Garvin, Clifton W., 4,584,543, Cl. 333-103.000.

Johnson Electric Industrial Manufactory Limited: *See—*
Strobl, Georg, 4,584,498, Cl. 310-236.000.

Johnson, Harold D., to Manville Service Corporation. Resealable paperboard package. 4,583,679, Cl. 229-43.000.

Johnson & Johnson Products, Inc.: *See—*
Finkelstein, Paul; and Yost, Kevin G., 4,583,564, Cl. 132-91.000.

Johnson, Lyle R., to Parker-Hannifin Corporation. Rigid mount coupler with flow check stop. 4,583,711, Cl. 251-149.600.

Johnson, Samuel A. Ruffler attachment for sewing machines. 4,583,472, Cl. 112-132.000.

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Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., 4,584,511, Cl. 318-600.000.

Johnson, Thomas H., to Shell Oil Company. Hydroformylation process. 4,584,411, Cl. 568-451.000.

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Chance, Christopher P.; Coble, Ralph P., Jr.; Ingle, Edwin C.; and Jones, Joye A., 4,584,441, Cl. 179-170.200.

Jones, Phillip L.: *See—*
Cocks, Franklin H.; Jones, Phillip L.; and Schaffer, James P., 4,584,501, Cl. 313-493.000.

Joshi, David P., to Colgate-Palmolive Company. Translucent soaps and processes for manufacture thereof. 4,584,126, Cl. 252-368.000.

Joy Manufacturing Company: *See—*
Stern, Jay L.; Spencer, Herbert W., III; and Lebel, Alon, 4,584,271, Cl. 435-167.000.

Joyce, Christopher: *See—*
White, Cyril J.; and Joyce, Christopher, 4,583,801, Cl. 339-17.00C.

Joyner, Robert G., to Dana Corporation. Heavy duty yoke. 4,583,960, Cl. 464-134.000.

Juel, Anders: *See—*
Myklebust, Eirik; Juel, Anders; and Rasmussen, Odd F., 4,584,705, Cl. 383-8.000.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Brustle, Klaus, 4,583,261, Cl. 16-238.000.

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Kabbany, Reda. Golfer's stance positioning device. 4,583,739, Cl. 273-187.00R.

Kabelmetal Electro GmbH: *See—*
Mohring, Gunter; and Block, Detlef, 4,584,588, Cl. 343-786.000.

Kabushiki Kaisha Asano Kenkyusho: *See—*
Asano, Kazuo, 4,583,436, Cl. 83-104.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Yoneda, Kazuhiko, 4,583,959, Cl. 464-68.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Komatsu, Fumiaki; Hirano, Seiichi; and Tanabe, Hiromi, 4,584,004, Cl. 55-422.000.
Shigekawa, Kazuo, 4,583,927, Cl. 418-150.000.

Kabushiki Kaisha Koden Seisakusho: *See—*
Fujino, Teruhisa; Chiwaki, Kenichi; and Narazaki, Sadatoshi, 4,584,580, Cl. 343-18.00E.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Hoashi, Kenzo; Morita, Koichi; and Matsuda, Kazuo, 4,583,371, Cl. 60-426.000.
Nagata, Yoshihiro; Onohara, Kazuyuki; Ukibe, Koji; and Kitani, Toshio, 4,583,791, Cl. 305-27.000.

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Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,584,445, Cl. 200-144.00B.

Kabushiki Kaisha Suwa Seikosha: *See—*
Kasai, Mosuni; Kanai, Masao; and Okubo, Akira, 4,583,866, Cl. 368-232.000.

Kabushiki Kaisha Toka-Rika-Denki-Seisakusho: *See—*
Matsui, Kenji; and Teraoka, Fuminori, 4,583,701, Cl. 242-107.40A.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Hattori, Masaichi; Hara, Shigeo; and Manabe, Shunichi, 4,584,546, Cl. 335-186.000.

Kabushiki Kaisha Toshiba: *See—*
Isobe, Seiji; and Kaijima, Makoto, 4,584,712, Cl. 455-273.000.
Ozeki, Takeshi; Tamura, Toshifumi; and Fujihara, Mutsumi, 4,584,678, Cl. 370-85.000.
Sakamoto, Noriaki; and Hirai, Shinji, 4,583,378, Cl. 62-505.000.
Shimono, Mamoru; Hashimoto, Shinichi; and Nishimura, Fuminobu, 4,583,842, Cl. 355-3.0DD.
Takahara, Kenichi; and Sudo, Hajime, 4,583,794, Cl. 308-10.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Sakata, Jiro; and Yamamoto, Minoru, 4,583,996, Cl. 55-16.000.
Taga, Yasunori; and Sawada, Yutaka, 4,583,815, Cl. 350-1.600.

Kabushikikaisha Kotobuki: *See—*
Kageyama, Toshihiko, 4,583,874, Cl. 401-85.000.

Kadokura, Hidekimi; Umezaki, Hiroshi; and Murakami, Hideaki, to Sumitomo Chemical Company, Limited. Abrasive, production thereof and use thereof in magnetic recording medium. 4,584,243, Cl. 428-403.000.

Kaeding, Warren W.: *See—*
Barile, George C.; and Kaeding, Warren W., 4,584,422, Cl. 585-467.000.

Kaetsu, Isao: *See—*
Yoshida, Masaru; Asano, Masaharu; Kaetsu, Isao; Yamanaka, Hidetoshi; Nakai, Katsuyuki; Yuasa, Hisako; and Shida, Keizo, 4,584,136, Cl. 260-397.500.

Kageno, Kenzi: *See—*
Ueda, Toshio; Kageno, Kenzi; and Harada, Susumu, 4,583,989, Cl. 8-543.000.

Kageyama, Katsuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Plasma devices. 4,584,160, Cl. 376-141.000.
Kageyama, Toshihiko, to Kabushikikaisha Kotobuki. Knock-type propelling pencil with storage cartridge. 4,583,874, Cl. 401-85.000.
Kaijima, Makoto: *See*—
Isobe, Seiji; and Kaijima, Makoto, 4,584,712, Cl. 455-273.000.
Kajino, Jirou: *See*—
Tokunaga, Tomokazu; Kajino, Jirou; and Izaki, Masataka, 4,583,827, Cl. 350-429.000.
Kajioka, Hiroshi: *See*—
Iizuka, Hisao; and Kajioka, Hiroshi, 4,584,470, Cl. 250-231.00R.
Kakugo, Masahiro; Fukui, Yoshiharu; Wakatsuki, Kizuku; Ima, Seiichiro; and Kimura, Junichi, to Sumitomo Chemical Company, Limited. Stretched multilayer polypropylene film. 4,584,239, Cl. 428-349.000.
Kalavitz, Paul V.; and Griner, Ralph R. Pressure control system. 4,583,566, Cl. 137-101.190.
Kalishman, Bernard. Coin chutes for a coin apparatus. 4,583,630, Cl. 194-227.000.
Kamat, Dattatraya V.; and Nabors, James R., to Crown Textile Company. Waistband assembly. 4,583,249, Cl. 2-220.000.
Kameda, Toshinori, to National Can Corporation. Method and apparatus for pressurizing containers. 4,583,346, Cl. 53-431.000.
Kami, Yozo; Minakawa, Masaaki; and Kubo, Kanji, to Honda Giken Kogyo Kabushiki Kaisha. Upper suspension arm support structure. 4,583,759, Cl. 280-673.000.
Kaminski, Henry, to Allied Corporation. High frequency switching battery charger. 4,584,514, Cl. 320-33.000.
Kammiller, Neil A., to Reliance Electric Company. Arrangement of field effect transistors for operation in the switched mode at high frequency. 4,584,595, Cl. 357-41.000.
Kamon, Koichi: *See*—
Namba, Hirokuni; Osaka, Hajime; Kamon, Koichi; and Higuchi, Fuminori, 4,584,053, Cl. 156-603.000.
Kan, Fumitaka; Tajima, Hatsuo; Hosoi, Atsushi; Takenouchi, Masanori; and Saito, Takashi, to Canon Kabushiki Kaisha. Thin developer layer forming apparatus. 4,583,490, Cl. 118-658.000.
Kanagy, Jonas J. Apparatus for automatically cooking products made of batter, such as pancakes. 4,583,451, Cl. 99-423.000.
Kanai, Masao: *See*—
Kasai, Masami; Kanai, Masao; and Okubo, Akira, 4,583,866, Cl. 368-232.000.
Kanai, Nobuo: *See*—
Nakamura, Hiromu; Ueda, Toshihiko; Hyodo, Haruhiro; Kuroda, Muneo; Hamada, Akiyoshi; Nakauchi, Hiroaki; and Kanai, Nobuo, 4,583,846, Cl. 355-52.000.
Kanai, Shigeru, to Tachikawa Spring Co., Ltd. Seat support for a vehicle seat. 4,583,783, Cl. 297-452.000.
Kanazaki, Makoto: *See*—
Tango, Yasuo; and Kanazaki, Makoto, 4,583,266, Cl. 19-0.390.
Kane Graphical Corporation: *See*—
Kane, Michael N.; and Hogan, Lawrence R., 4,583,309, Cl. 40-152.000.
Kane, Kenneth W. Piercing unit with rotating head. 4,583,438, Cl. 83-555.000.
Kane, Michael N.; and Hogan, Lawrence R., to Kane Graphical Corporation. Tamper-proof display assembly. 4,583,309, Cl. 40-152.000.
Kaneda, Hiroshi: *See*—
Mitsumori, Masahito; Hamabe, Kenji; and Kaneda, Hiroshi, 4,583,926, Cl. 418-137.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Hisada, Yoji; Sasamoto, Koichi; Ichinose, Masao; Utaka, Osamu; and Nakayama, Seiya, 4,584,024, Cl. 127-66.000.
Nanao, Tsutomu; and Eguchi, Tamiyuki, 4,584,280, Cl. 501-80.000.
Kaneko, Yoshio: *See*—
Suzuki, Masakuni; Maeyama, Sadao; Arai, Kiyoshi; Kaneko, Yoshio; and Fujito, Shohgo, 4,584,601, Cl. 358-80.000.
Kanematu, Tetuo; and Hamano, Saburo, to Daicel Chemical Industries, Ltd. Dehydrating method. 4,584,092, Cl. 208-188.000.
Kao Corporation: *See*—
Tejima, Tohru; Nakamura, Koichi; Hattori, Michihiro; Masuda, Shinichi; Imokawa, Genji; and Takaishi, Naotake, 4,584,190, Cl. 424-59.000.
Kapfer, Jurgen; Korkemeier, Hans; and Groger, Klaus, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Exhaust gas turbocharger. 4,583,367, Cl. 60-605.000.
Kaplan, Harvey R.: *See*—
Steffen, Robert P.; Evans, Dale B.; Kaplan, Harvey R.; and Weisbach, Jerry A., 4,584,299, Cl. 514-252.000.
Karl Fischer Industrieanlagen GmbH: *See*—
Gerking, Luder; and Taurat, Dieter O., 4,584,366, Cl. 528-502.000.
Karlin, David B.; Patel, Chandra K. N.; Wood, Obert R., II; Bridges, Thomas J.; and Strnad, Albert R., to Cornell Research Foundation, Inc.; and Bell Telephone Laboratories, Inc. Laser surgical system. 4,583,539, Cl. 128-303.100.
Karliner, Rudolf R.; and Peterson, Gerald E., to Wagner Spray Tech Corporation. Paint roller feeder. 4,583,876, Cl. 401-197.000.
Karlsson, Jardin U., to ABU Aktiebolag. Level winding fishing reel. 4,583,699, Cl. 242-84.420.
Kasahara, Kumio: *See*—
Ito, Sho; Nakaguchi, Tomoyuki; Kasahara, Kumio; Takei, Toshio; Hashimoto, Tsutomu; and Nakahara, Shojiro, 4,583,733, Cl. 273-26.00R.
Kasai, Masami; Kanai, Masao; and Okubo, Akira, to Kabushiki Kaisha Suwa Seikosha. Watch dial and method for preparation. 4,583,866, Cl. 368-232.000.
Kasamura, Toshirou; and Yoshida, Yasumi, to Canon Kabushiki Kaisha. Developing device. 4,583,832, Cl. 355-3.0DD.
Kasevich, Raymond S., to Raytheon Company. Subsurface radiating dipole. 4,583,589, Cl. 166-60.000.
Kashimoto, Takashi: *See*—
Kusunoki, Shigeru; Nobue, Tomotaka; and Kashimoto, Takashi, 4,584,447, Cl. 219-10.55D.
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, to Kabushiki Kaisha Meidensha. Vacuum interrupter. 4,584,445, Cl. 200-144.00B.
Kasper, Richard: *See*—
Hill, Richard C.; Kasper, Richard; Radley, David J.; and Pete, Arthur R., 4,583,495, Cl. 122-251.000.
Kastner, Dietrich: *See*—
Uijttewaal, Arnoldus; and Kastner, Dietrich, 4,584,127, Cl. 252-522.00R.
Kaszmann, John, to Polestar Magnetronics Inc. Reluctance motor with electronically controlled stator windings. 4,584,506, Cl. 318-254.000.
Katahira, Shunsuke, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for driving a CCD image sensor. 4,584,611, Cl. 358-293.000.
Kataoka Bussan Kabushiki Kaisha: *See*—
Kataoka, Joji, 4,584,101, Cl. 210-474.000.
Kataoka, Joji, to Kataoka Bussan Kabushiki Kaisha. Coffee package. 4,584,101, Cl. 210-474.000.
Katayama, Takao, to Idemitsu Kosan Company Limited. Electric insulating oils. 4,584,129, Cl. 252-570.000.
Kato, Hisatoyo, to Fuji Photo Film Co., Ltd. Noise erasing method in radiation image recording and reproducing method. 4,584,483, Cl. 250-459.100.
Kato, Masaru: *See*—
Kobayashi, Kyoji; Kato, Masaru; Fujisawa, Koichi; Nagamine, Yoshinori; and Nakajima, Fumio, 4,584,508, Cl. 318-483.000.
Katsuki, Kanji: *See*—
Higashino, Shigenori; Shikano, Yoshiro; and Katsuki, Kanji, 4,584,518, Cl. 323-224.000.
Kattoh, Haruyasu: *See*—
Miki, Isao; Nagi, Tsutomu; and Kattoh, Haruyasu, 4,583,579, Cl. 164-457.000.
Kaufman, John W.; and Rubendall, Douglas C., to AMP Incorporated. Surface mount connector. 4,583,807, Cl. 339-125.00R.
Kavesh, Sheldon: *See*—
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,584,347, Cl. 525-119.000.
Kawabata, Masuo: *See*—
Sakai, Takashi; Maeda, Kazuo; Kawabata, Masuo; and Kono, Mituo, 4,583,560, Cl. 131-336.000.
Kawai, Hisasi: *See*—
Tokura, Norihito; and Kawai, Hisasi, 4,584,553, Cl. 338-320.000.
Kawamura, Hideaki: *See*—
Nozawa, Ryoichiro; and Kawamura, Hideaki, 4,583,433, Cl. 82-1.00C.
Kawamura, Seiichiro: *See*—
Takaoka, Matsuo; Sasaki, Nobuo; Kawamura, Seiichiro; and Hataishi, Osamu, 4,584,025, Cl. 148-1.500.
Kawamura, Toshio: *See*—
Arakawa, Kazumi; Sugie, Masuo; Watanabe, Takashi; Nishio, Takumi; Kawamura, Toshio; Nagahata, Tsutomu; and Matsushita, Takashi, 4,583,721, Cl. 266-220.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Yazaki, Mitsuhiro, 4,583,913, Cl. 415-196.000.
Kawasawa, Toshio; Sato, Katsujiro; and Sugiura, Akiyoshi, to Toyota Jidosha Kabushiki Kaisha. Belt tensioner. 4,583,961, Cl. 474-113.000.
Kawashima, Hiromi: *See*—
Arakawa, Hideki; and Kawashima, Hiromi, 4,584,494, Cl. 307-603.000.
Kayanuma, Akio; Nakamura, Minoru; and Asano, Katsuaki, to Sony Corporation. Method for manufacturing a semiconductor device. 4,584,055, Cl. 156-628.000.
Kazan, Benjamin, to Xerox Corporation. Optical recording using field-effect control of heating. 4,583,833, Cl. 355-9.000.
Keith, Dennis D.: *See*—
Albrecht, Harry A.; Konzelmann, Frederick M.; and Keith, Dennis D., 4,584,132, Cl. 260-239.00A.
Keith, Jeffrey S., to Ingersoll-Rand Company. Lubrication system for a compressor. 4,583,919, Cl. 417-228.000.
Keller, Joseph R., to Alinabal Inc. Platens for printers. 4,583,272, Cl. 29-110.000.
Kellogg, Nelson R. Capacitive tactile sensor. 4,584,625, Cl. 361-283.000.
Kenkyusho, Rikagaku: *See*—
Imahori, Kazutomo; Nakajima, Hiroshi; and Nagata, Kazuhiko, 4,584,272, Cl. 435-194.000.
Kenna, Robert V., to Pfizer Hospital Products Group, Inc. Rasp handle. 4,583,270, Cl. 29-80.000.
Kenntnis, Inc.: *See*—
Thiele, Charles W., 4,583,885, Cl. 406-168.000.
Kenworthy, James S.; Motyka, Victor; and Spindler, Robert G., to PPG Industries, Inc. Precured split hinge for photomask assembly. 4,584,216, Cl. 428-38.000.
Kernforschungsanlage Julich GmbH: *See*—
Divisek, Jiri; Schmitz, Heinz; and Wullenweber, Heinz, 4,584,065, Cl. 204-11.000.
Kersten, Jean: *See*—
Bocquet, Jacques R.; Goldhaber, Richard P.; Kersten, Jean; Mathias, Jean-Marie; and Pearson, Stephen, 4,583,971, Cl. 604-82.000.

Kesting, Marinus C., to Swiss Aluminium Ltd. Wear resistant coating alloy. 4,584,019, Cl. 75-126.00A.

Key Logic, Inc.: *See*—
Hardy, Norman, 4,584,639, Cl. 364-200.000.

KFA Julich: *See*—
Franchy, Rene ; Ibach, Harald; and Bruchmann, Heinz D., 4,584,474, Cl. 250-305.000.

Kiesling, Manfred; and Kuhnert, Volker, to U.S. Philips Corporation. Electric incandescent lamp. 4,584,502, Cl. 315-64.000.

Kikuchi, Juro: *See*—
Mizokami, Kazunori; Kimura, Tadashi; Kikuchi, Juro; Tamagawa, Akira; Yunoki, Yutaka; and Nakamura, Kazuo, 4,584,610, Cl. 358-228.000.

Kikuchi, Katsuji: *See*—
Mogaki, Tadahisa; Matsumura, Mitsuma; Nozawa, Nobuyuki; Kikuchi, Katsuji; Nakao, Haruki; and Mikiya, Toshio, 4,583,255, Cl. 5-453.000.

Kim, Manjin J.: *See*—
Ghezzo, Mario; and Kim, Manjin J., 4,583,281, Cl. 29-576.00W.

Kim, Myunghwan: *See*—
Chung, Yeongchoon; and Kim, Myunghwan, 4,584,505, Cl. 318-254.000.

Kimura, Hideyuki, to Tokyo Bussan Kabushiki Kaisha. Focus adjusting device for binocular. 4,583,828, Cl. 350-552.000.

Kimura, Junichi: *See*—
Kakugo, Masahiro; Fukui, Yoshiharu; Wakatsuki, Kizuku; Ima, Seiichiro; and Kimura, Junichi, 4,584,239, Cl. 428-349.000.

Kimura, Tadashi: *See*—
Mizokami, Kazunori; Kimura, Tadashi; Kikuchi, Juro; Tamagawa, Akira; Yunoki, Yutaka; and Nakamura, Kazuo, 4,584,610, Cl. 358-228.000.

Kindler, Wilfried, to Siemens Aktiengesellschaft. Fastening and connecting arrangement for piezoelectric driving elements in the write heads of ink writing devices. 4,584,591, Cl. 346-140.00R.

King Design, Inc.: *See*—
King, Edward C.; and Robinson, Larry G., 4,583,312, Cl. 40-621.000.

King, Edward C.; and Robinson, Larry G., to King Design, Inc. Changeable sign board with magnetic characters. 4,583,312, Cl. 40-621.000.

King, William F., to Chevron Research Company. Pesticidal tin amidoximes. 4,584,317, Cl. 514-493.000.

King, William H.: *See*—
Tainter, Leland B., Jr.; Goeppinger, Edward J.; King, William H.; and Smith, Ronald E., 4,583,806, Cl. 339-75.0MP.

Kinghorn, John R., to U.S. Philips Corporation. Digital code detector circuits. 4,584,567, Cl. 340-347.0DD.

Kinoshita, Takao: *See*—
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; and Hosoe, Kazuya, 4,584,656, Cl. 364-569.000.

Kirby, Charles E.: *See*—
DuVall, John G.; Kirby, Charles E.; and Hardie, Suzanne L., 4,584,203, Cl. 426-549.000.

Kirchner, Hansjorg, to Kirchner & Wilhelm. Milk suction device. 4,583,970, Cl. 604-74.000.

Kirchner & Wilhelm: *See*—
Kirchner, Hansjorg, 4,583,970, Cl. 604-74.000.

Kirk, David L.; and Spiesman, Robert L., to Honeywell. Real time clock synchronization. 4,583,865, Cl. 368-46.000.

Kirkland, Donald R. Rod flotation device. 4,583,314, Cl. 43-25.000.

Kirstine/Hendricks: *See*—
Clover, William M., Jr., 4,583,661, Cl. 222-42.000.

Kishi, Ichirou: *See*—
Hata, Shunichi; Miyata, Makoto; and Kishi, Ichirou, 4,583,934, Cl. 425-376.00R.

Kishida, Tohru: *See*—
Hasegawa, Yoshii; Tsuruta, Takeshi; Kohgo, Takao; Nakamura, Masahiro; and Kishida, Tohru, 4,583,717, Cl. 266-44.000.

Kitagawa, Hironobu: *See*—
Kobayashi, Takuma; Kitagawa, Hironobu; Sugitawa, Chikara; and Kobayashi, Shigeo, 4,584,353, Cl. 525-438.000.

Kitakizaki, Kaoru: *See*—
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,584,445, Cl. 200-144.00B.

Kitamura, Teruo: *See*—
Fujii, Tsunenori; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Koto, Kaoru; Ohmori, Hideki; Yokokura, Hisao; Okabe, Yoshiaki; Hattori, Shintaroo; Kitamura, Teruo; Mukoh, Akio; and Sato, Mikio, 4,584,120, Cl. 252-299.630.

Kitani, Toshio: *See*—
Nagata, Yoshihiro; Onohara, Kazuyuki; Ukibe, Koji; and Kitani, Toshio, 4,583,791, Cl. 305-27.000.

Kitazawa, Yoshio: *See*—
Ando, Narumi; Oda, Kito; Saiki, Takashi; Hashimoto, Yoshiaki; Tsuyuki, Akira; and Kitazawa, Yoshio, 4,584,066, Cl. 204-28.000.

Kitchen, Alonzo G., to Phillips Petroleum Company. Craze-resistant transparent resinous polymodal block copolymers. 4,584,346, Cl. 525-98.000.

Kiys, Nobuyuki, to Fanuc Ltd. Method of discriminating present position region of a machine. 4,584,509, Cl. 318-571.000.

Kiyama, Masao: *See*—
Nagai, Norimichi; Sugita, Norio; Horiishi, Nanao; Kiyama, Masao; and Takada, Toshio, 4,584,242, Cl. 428-403.000.

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Burkholder, Wendell E.; Phillips, Joel K.; Walgenbach, Catherine A.; and Klein, Janet A., 4,584,193, Cl. 424-84.000.

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Panster, Peter; Michel, Rudolf; Buder, Wolfgang; and Kleinschmit, Peter, 4,584,395, Cl. 556-479.000.

Kliger, Isaac E., to Raytheon Company. Method of measuring range and altitude. 4,584,584, Cl. 343-451.000.

Kline, Roy W., to United States of America, Army. One fin orientation and stabilization device. 4,583,703, Cl. 244-3.240.

Klingel, Hans, to Trumpf GmbH & Co. Machine tool for stamping, nibbling and thermal cutting and the like. 4,583,719, Cl. 266-72.000.

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Klotz, Marvin R., to Standard Oil Company (Indiana). Formation of alkyl ethers from alcohols and alkenes using AMS-1B crystalline borosilicate. 4,584,415, Cl. 568-697.000.

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Franz, Friedhelm; Nestler, Walter; Wobst, Eberhard; Kluge, Christian; Preussker, Egon; and Ulbrich, Gunther, 4,583,374, Cl. 62-210.000.

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Knepp, John B.: *See*—
Wilson, Patricia A.; Stackhouse, Kenneth B.; Chakraborty, Sujit; Ching, Walter S.; Hill, William D.; Knepp, John B.; Ward, James P.; and Zediker, Warren L., 4,584,165, Cl. 376-216.000.

Knight, Donald L. Golf game apparatus. 4,583,735, Cl. 273-87.400.

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Sturza, Mark A.; Knitter, Wayne L.; and Wu, Yi-Zen, 4,584,652, Cl. 364-484.000.

Knoop, Henry E., to VCF Packaging Films, Inc. Solvent cast acrylic film. 4,584,231, Cl. 428-220.000.

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Taguchi, Jun; Kobayashi, Hiroomi; and Koyama, Takahiro, 4,584,370, Cl. 536-87.000.

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Kobayashi, Makoto: *See*—
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Kobinger, Walter: *See*—
Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hanel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,584,293, Cl. 514-213.000.

Koch, Dieter: *See*—
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Kochs Adler AG: *See*—
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Takeuchi, Teruaki; Suzuki, Ryo; Kodama, Naoki; Takeshita, Masatoshi; Ikeda, Tadashi; Sato, Toshihiro; and Sugita, Yutaka, 4,584,668, Cl. 365-36.000.

Koenig, Erl. Percussion air motor. 4,584,438, Cl. 179-115.5DV.

Koenig, Jean-Jacques: *See—*
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Koetser, Adrian H., to GEC Avionics Limited. Infra-red optical systems. 4,583,814, Cl. 350-1.200.
Kohgo, Takao: *See—*
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Kojicic, Bozidar. Double walled screen-filter with perforated joints. 4,583,594, Cl. 166-228.000.
Kokernak, Denis T. Syringe for balloon dilation catheters. 4,583,974, Cl. 604-211.000.
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Komakine, Shigeo: *See—*
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Komanduri, Ranga; and Reed, William R., Jr., to General Electric Company. Self-sharpening coated tool constructions. 4,583,431, Cl. 82-1.00C.
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Komatsu, Fumiaki; Hirano, Seiichi; and Tanabe, Hiromi, to Kabushiki Kaisha Kobe Seiko Sho. Dust collector. 4,584,004, Cl. 55-422.000.
Komorowski, Jacek S.: *See—*
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Komoto, Nobuo; Arai, Kiyoshi; and Hirose, Setsuko, to Mitsui Toatsu Chemicals, Inc. Microbiocidal 1-[1-(alkoxyphenyl)vinyl]-1H-imidazoles. 4,584,311, Cl. 514-399.000.
Kondow, Kiyohiro, to Shin-Etsu Chemical Co., Ltd. Liquid silicone rubber composition. 4,584,342, Cl. 524-860.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
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Konzelmann, Frederick M.: *See—*
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Kopp, Walter: *See—*
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Kopper, Werner: *See—*
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Kordik, Kenneth S., to Applied Motion Products, Inc. Performance step motor. 4,584,495, Cl. 310-49.00R.
Korkemeier, Hans: *See—*
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Kornmann, Michel: *See—*
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Kosak, Wolfgang, to Robert Bosch GmbH. Emergency operation device for microcomputer-controlled systems. 4,584,645, Cl. 364-431.110.
Kosaka, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Loop back control system in loop data transmission system. 4,584,677, Cl. 370-15.000.
Koshizuka, Kunihiro: *See—*
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Koto, Kaoru: *See—*
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Kotobuki Seiyaku Co., Ltd.: *See—*
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Kozuch, Marcel, to H. F. Henderson Industries. Method and apparatus for determining and directly measuring the voltage standing wave ratio of an RF transmission system. 4,584,650, Cl. 364-481.000.
Kracl, Norman P. Corn harvester combine assembly with corn removal attachment. 4,583,354, Cl. 56-16.600.
Kramer, Charles J., to Holotek Ltd. Preobjective hologon scanner system. 4,583,816, Cl. 350-3.710.
Kramer, H. Carl B.; and Gerhardt, Hans-Joachim, to Dow Chemical Company, The. Flat roof structure. 4,583,337, Cl. 52-302.000.
Kramming, Erik, to Bengt Lundin AB. Method of storing handle bags. 4,583,349, Cl. 53-459.000.
Krapcho, John: *See—*
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Krapf, Wallace A. Magnetic display panels. 4,584,223, Cl. 428-58.000.
Krass, Dennis K., to PPG Industries, Inc. Herbicidally active substituted diphenyl ether oxime derivatives. 4,584,403, Cl. 564-255.000.
Kraus, Josef; and Jaufmann, Franz, to Kuku Schweissanlagen; and Roboter GmbH. Step-type production line and method of operating same. 4,583,634, Cl. 198-341.000.
Krause, William F., Jr.; and Hopmann, Mark E., to Baker Oil Tools, Inc. Downhole locking apparatus. 4,583,591, Cl. 166-217.000.
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Aufderhaar, Erhard; Gruebl, Ernst; and Pfaff, Siegfried, 4,583,747, Cl. 277-3.000.
Krauss, Timothy A.; Roman, Stephan; and Beurer, Robert J., to United Technologies Corporation. Pneumatic system structure for circulation control aircraft. 4,583,704, Cl. 244-17.110.
Kreku, Sven I.; and Lennartsson, Lars K., to Oy Wiik & Hoglund AB. Pipe joint seal. 4,583,770, Cl. 285-177.000.
Krieger, David A., to Gas Research Institute. Frequency modulated burner system. 4,583,936, Cl. 431-1.000.
Krieger, Eberhard; Schulz, Gunter; and Igel, Wolfgang, to Zinser Textilmaschinen GmbH. Roving-bobbin feeder for spinning machine. 4,583,358, Cl. 57-281.000.
Kristinsson, Sigurdur, to Nordischer Maschinenbau Rud. Baader GmbH & Co. Kg. Device for processing fish heads. 4,583,265, Cl. 17-55.000.
Kroeger, Daniel E.; and Anderson, Robert C. Tab top can opener. 4,583,429, Cl. 81-3.550.
Kroll, Lambert: *See—*
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Kuga, Kazuhiko; Washita, Hiroshi; Watanabe, Hiroyuki; Kurita, Kohji; and Harada, Takeshi, to Asahi Glass Company Ltd. Laminated safety glass. 4,584,245, Cl. 428-409.000.
Kuhnert, Volker: *See—*
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Kukita, Kenichi: *See—*
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Kumagai, Naotake; Tatemoto, Minoru; Itoh, Yoji; and Inuzuka, Tokushige, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling the rolling of an engine. 4,583,503, Cl. 123-192.00R.
Kumagai, Yuzo; and Ogawa, Yuichiro, to Bridgestone Tire Company Limited. Looped-article transfer apparatus. 4,584,050, Cl. 156-406.200.
Kumakawa, Akinaga: *See—*
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, 4,584,171, Cl. 419-8.000.
Kumura, Hiruyoshi; Yamamuro, Sigeaki; Tanaka, Yoshikazu; Hirano, Hiroyuki; and Abo, Keiju, to Nissan Motor Co., Ltd. Vehicle/engine operational parameter responsive clutch control. 4,583,627, Cl. 192-0.076.
Kun, Lajos: *See—*
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Kunzli, Roland; Schroder, Gunther; and Singer, Robert, to BBC Brown, Boveri & Co., Ltd. Apparatus for the zone-annealing of a workpiece consisting of a high-temperature material. 4,583,720, Cl. 266-81.000.
Kurata, Motoharu, to Asahi Glass Co., Ltd. Apparatus for manufacturing glass. 4,584,007, Cl. 65-337.000.
Kurimoto, Ltd.: *See—*
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Kuroiwa, Katsumasa; Nakatsuyama, Shuichi; and Nagasawa, Takeshi, to Nitto Boseki Co., Ltd. Arginyl-3-carboxy-4-hydroxyanilide. 4,584,398, Cl. 562-439.000.
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Kurz, Jurgen. Method for dyeing and lubricating sewing threads in a single bath and suited compositions for finishing. 4,583,987, Cl. 8-495.000.
Kusumoto, Isao: *See*—
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Kusunoki, Shigeru; Nobue, Tomotaka; and Kashimoto, Takashi, to Matsushita Electric Industrial Co., Ltd. Electromagnetic wave energy seal arrangement. 4,584,447, Cl. 219-10.55D.
Kutaragi, Ken, to Sony Corporation. Electronic camera. 4,584,598, Cl. 358-29.000.
Kwasniok, Alois: *See*—
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La Francaise Metallurgie: *See*—
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Labarde, Bernard. Tissue protection device for mounting on the head of a dentist's drill. 4,583,945, Cl. 433-116.000.
La Barre, Marcus A.; Trask, Jeffrey L.; and Archibald, Roger D., to Hewlett-Packard Company. Vibratory toner dispensing system. 4,583,660, Cl. 222-1.000.
Lachish, Doron: *See*—
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Lack, Geoffrey J., to Northern Engineering Industries PLC. Toothed gear system. 4,583,413, Cl. 74-410.000.
Ladner, Emory G. Dart flight. 4,583,745, Cl. 273-423.000.
LaFiandra, Carlo; and Hughes, Gregory P., to Perkin-Elmer Corporation, The. X-ray anode assembly. 4,584,699, Cl. 378-130.000.
Lahoda, Edward J.; Burgman, Herbert A.; and Snyder, Thomas S., to Westinghouse Electric Corp. Process and apparatus for isotopic enrichment using lasers. 4,584,073, Cl. 204-157.200.
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Laiacona, James A.; and Laiacona, Frances M. Bunion brace. 4,583,303, Cl. 36-95.000.
Lakra, Paul: *See*—
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Lamattina, John R.; and Petric, Paul F., to Varian Associates, Inc. Envelope apparatus for localized vacuum processing. 4,584,479, Cl. 250-441.100.
Lambert, Clifford L.: *See*—
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Lambert, Lester T., III, to Electro-Sport, Inc. Video system. 4,584,572, Cl. 340-703.000.
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Landis, Phillip S.: *See*—
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Lang, Howard J., to Water Research Centre. High pressure jets. 4,583,329, Cl. 51-410.000.
Langberg, Edwin. Low inertia X-Y cable drive. 4,583,292, Cl. 33-1.00M.
Lange, Ludwig: *See*—
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Lannuzel, Olivier; and Pradal, Thierry, to CGR Ultrasonic. Method for measuring the flow parameters of a fluid and device utilizing the method. 4,583,409, Cl. 73-861.250.
Lao, Binneg Y., to Allied Corporation. Surface acoustic wave infrared line imaging array. 4,584,475, Cl. 250-332.000.
Lapidus, Herbert, to Combe Incorporated. Catalyzed bismuth dye system for human hair. 4,583,986, Cl. 8-405.000.
Lapsker, Itzchak, to GAL International Industries Inc. Apparatus for high tolerance polishing of a workpiece surface. 4,583,328, Cl. 51-251.000.
Lardiere, Benjamin G., Jr.: *See*—
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Larner, Adrian, to International Business Machines Corp. Method of controlling use of resources in a data processing system by at least two processes. 4,584,644, Cl. 364-200.000.
Larsson, Ake L., to Mattel, Inc. Hair twining apparatus. 4,583,561, Cl. 132-9.000.
LaSpisa, Ronald J.: *See*—
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Laude, Jean-Pierre: *See*—
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Lawrence, Leslie: *See*—
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Le Carbone Lorraine, S.A.: *See*—
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Lea, Michael C., to University of Rochester. Electrocapillary devices. 4,583,824, Cl. 350-267.000.
Leach, Jack, to Burlington Industries, Inc. Controlling fabric porosity. 4,584,152, Cl. 264-103.000.
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Lyman, Richard R.; and Taylor, Robert W., 4,584,041, Cl. 156-156.000.
Lebel, Alon: *See*—
Stern, Jay L.; Spencer, Herbert W., III; and Lebel, Alon, 4,584,271, Cl. 435-167.000.
Lebling, Karl; Reisser, Helmut; and Saris, Hendrik J. A., to Deutsche Akzo Coatings & Byk-Mellinckrodt Chemische Products, GmbH. Device for use in chromatometry of samples. 4,583,858, Cl. 356-402.000.
Leckart, Arthur R.; and Hansen, H. Victor, to Cosan Chemical Corporation. Bismuth catalyst system for preparing polyurethane elastomers. 4,584,362, Cl. 528-55.000.
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Bauman, Therese M.; Lee, Chi-Long; and Rabe, James A., 4,584,324, Cl. 521-88.000.
Lee, Donald T. Y., to Signetics Corporation. Self referenced sense amplifier. 4,584,493, Cl. 307-530.000.
Lee, Eddie C.; and Nunne, William H., to Honeywell Inc. Step shape tailoring by phase angle variation RF bias sputtering. 4,584,079, Cl. 204-192.00S.
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Liu, Kang-Jen; and Lee, Ho-Lun, 4,584,246, Cl. 428-522.000.
Legge, John: *See*—
Drabek, Jozef; Legge, John; and Bachmann, Markus, 4,584,296, Cl. 514-147.000.
LeGrand, Donald G.; and Olszewski, William V., to General Electric Company. Method for accelerating the failure of coatings. 4,583,407, Cl. 73-762.000.
Lehmann, Gunter: *See*—
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Lehmann, Rainer, to APEC Freizeitanlagen GmbH. Linked vehicle. 4,583,479, Cl. 114-345.000.
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Leipold, Dianne P., to Hercules Incorporated. Bactericidal toothpastes. 4,584,189, Cl. 424-54.000.
Leland Stanford Junior University, The Board of Trustees of the: *See*—
Schoolnik, Gary K.; and Rothbard, Jonathan, 4,584,195, Cl. 424-92.000.

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Bichot, Bernard; Lemaignen, Henri; and Louis, Bernard, 4,583,697, Cl. 242-55.100.

Lenert, Eugene. Clearing appliance, especially for snow clearance. 4,583,307, Cl. 37-233.000.

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Kreku, Sven I.; and Lennartsson, Lars K., 4,583,770, Cl. 285-177.000.

Lepetchenko, Stanislav N.: *See*—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Ertli, Alisa A.; Marina, Semen I.; Avxentiev, Anatoly G.; Lepetchenko, Stanislav N.; and Serzhantu, Ivan P., 4,583,977, Cl. 604-174.000.

Lepone, Gerald E., to Du Pont de Nemours, E. I., and Company. Triazinyl-amino carbonyl-benzene sulfonamides. 4,584,011, Cl. 71-93.000.

Leppard, David G.; and Rody, Jean, to Ciba-Geigy AG. Color-photographic recording material. 4,584,265, Cl. 430-551.000.

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Chive, Maurice; Constant, Eugene; Leroy, Yves; Mamouni, Ahmed; Robillard, Michele; and Van de Velde, Jean-Claude, 4,583,869, Cl. 374-122.000.

"Les Applications Industrielles Vosgiennes" en abrege "S.A.P.I.V-.O.G." : *See*—
Fort, Jacques, 4,583,727, Cl. 271-19.000.

Les Cables de Lyon: *See*—
Prigent, Madeleine; Bonicel, Jean P.; and Cottevielle, Christian, 4,584,333, Cl. 524-127.000.
Thevenon, Henri, 4,584,432, Cl. 174-128.00R.

Leskovec, Robert A.; Davenport, John M.; and Burman, Orvar B., to General Electric Company. Autoresonant piezoelectric transformer signal coupler. 4,584,499, Cl. 310-318.000.

Lessard, Jean; and Belot, Gerard, to Universite de Sherbrooke. Electrode for catalytic electrohydrogenation of organic compounds. 4,584,069, Cl. 204-74.000.

Letemps, Bernard: *See*—
Colmon, Daniel; Letemps, Bernard; Delpeyroux, Jean-Pierre; and Fremeaux, Jacques, 4,584,236, Cl. 428-333.000.

Levy, Henry A. Pneumatically-operated robotic toy. 4,583,957, Cl. 446-177.000.

Levy, Michel; and Surie, Serge, to Compagnie Industrielle des Telecommunications CIT-Alcatel. QPSK system with one cycle per Baud period. 4,584,693, Cl. 375-54.000.

Lewis, Joseph E.: *See*—
Hargreaves, Edward; and Lewis, Joseph E., 4,584,208, Cl. 427-160.000.

Libove, Joel; and Wilcox-Baker, Paul V., to Dual Systems Corporation. Method and apparatus for improving the transfer time in rotating data storage systems. 4,584,617, Cl. 360-49.000.

Liebhold, Martin R. Folding knock-down chair, with swingable seat support. 4,583,778, Cl. 297-56.000.

Lier, Clifford S. Securement of glass in fire doors and the like. 4,583,342, Cl. 52-714.000.

Liermann, Peter: *See*—
Hesse, Karl-Heinz; Liermann, Peter; and Neuhaus, Detlev, 4,584,487, Cl. 307-10.00R.

Lijphart, Enno E.; and Drewes, Gerardus, to Agence Spatiale Europeenne. Method and apparatus for demodulating a carrier wave which is phase modulated by a subcarrier wave which is phase shift modulated by baseband signals. 4,584,534, Cl. 329-122.000.

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Lilley, George M., to Allen, J. Warren. Process to beneficiate phosphate and sand products from debris and phosphate tailing ores. 4,584,096, Cl. 209-166.000.

Lillie, Christian: *See*—
Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, 4,584,293, Cl. 514-213.000.

Lim, Muill: *See*—
Klein, Robert S.; Lim, Muill; Ren, Wuyun; and Burchenal, Joseph H., 4,584,369, Cl. 536-54.000.

Lin, Chester H.: *See*—
Chabala, Leonard V.; and Lin, Chester H., 4,583,750, Cl. 277-168.000.

Lin, Hung C. Method of simulating a semiconductor MOSFET. 4,584,662, Cl. 364-802.000.

Lin, John W.; and Dudek, Lesley P., to Xerox Corporation. Electrophotographic imaging system. 4,584,253, Cl. 430-59.000.

Lind, Paul U.: *See*—
Beeman, Robert H.; and Lind, Paul U., 4,584,696, Cl. 375-99.000.

Lindahl, Erik; and Hovsenius, Gunnar. Method and apparatus for flue-gas cleaning. 4,583,999, Cl. 55-68.000.

Linde Aktiengesellschaft: *See*—
Nagel, Dieter; Gotz, Bernhard; Causin, Elmar; and Schroder, Werner-Georg, 4,583,761, Cl. 280-781.000.

Linder, Charles; and Perry, Mordechai, to Aligena AG. Reverse osmosis of ultrafiltration modified polyacrylonitrile-containing membrane. 4,584,103, Cl. 210-650.000.

Lindner, Georg H., to M&T Chemicals Inc. Positive displacement diaphragm pumps employing displacer valves. 4,583,920, Cl. 417-266.000.

Lindquist, Bjorn K. V.; and Petersson, Stig A., to Boliden Aktiebolag. Method for producing metallic lead by direct lead-smelting. 4,584,017, Cl. 75-77.000.

Line, Henri B., to Matix Industries (Societe Anonyme). Reprofiling device for rails through continuous milling. 4,583,893, Cl. 409-138.000.

List, William F.; and Minarik, Ronald W., to Westinghouse Electric Corp. Apparatus for modifying the liquefication or solidification point of a gas. 4,584,689, Cl. 372-55.000.

Litens Automotive Inc.: *See*—
Bytzek, Klaus K.; and Komorowski, Jacek S., 4,583,962, Cl. 474-133.000.

Litton Systems, Inc.: *See*—
Pulliam, George R., 4,584,237, Cl. 428-336.000.
Sturza, Mark A.; Knitter, Wayne L.; and Wu, Yi-Zen, 4,584,652, Cl. 364-484.000.

Liu, Kang-Jen; and Lee, Ho-Lun, to Chinese Petroleum Corp. Bipolar membranes. 4,584,246, Cl. 428-522.000.

Liu, Ping Y., to General Electric Company. High impact strength polycarbonate resin composition. 4,584,338, Cl. 524-504.000.

Livingston, William D.; and Jacob, Eugene E., to E-Systems, Inc. Tack-on acknowledgement in computer networks. 4,584,679, Cl. 370-94.000.

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Eriksson, Rolf B.; Jansson, Bertil; and Sjodahl, Jorgen, 4,583,573, Cl. 141-250.000.

Lloyd & Associates: *See*—
Kleinke, Bernard L.; and Freeman, Maynard L., 4,583,523, Cl. 128-1.00D.

Lloyd, Robert D.: *See*—
Holden, Irving H.; Lloyd, Robert D.; Mooney, Charles W.; and Phipps, Robert E., 4,583,774, Cl. 292-19.000.

Lo, Peter Y. K.: *See*—
Janik, Gloria; and Lo, Peter Y. K., 4,584,361, Cl. 528-15.000.

Lobastov, George S. Combination continuity and live circuit path tester. 4,584,526, Cl. 324-133.000.

Locker, Jan A. K., to C.L.M. Cooperatieve; and Machinefabriek A. Wijnveen B.V. Ede. Friction wheel transmission for driving a rotary sieve device. 4,583,415, Cl. 74-207.000.

Lockheed Missiles & Space Company, Inc.: *See*—
Bareket, Noah, 4,583,855, Cl. 356-351.000.

Lohr, Gernot; Mondt, Josef; and Graff, Hans, to Hoechst Aktiengesellschaft. Crosslinkable fluorine-containing copolymers, surface-coatings based on these copolymers, and the use thereof. 4,584,343, Cl. 525-60.000.

Longacre, James R.: *See*—
Walsh, John E.; and Longacre, James R., 4,583,399, Cl. 73-171.000.

Lopez, Michael J.; Williams, Howard A., Jr.; and Salvatori, Henry J. Motion sensitive security system. 4,584,569, Cl. 340-566.000.

Loraas, Orlan J.: *See*—
Halstensgaard, Gaylen E.; Henline, John W.; and Loraas, Orlan J., 4,583,760, Cl. 280-766.100.

L'Oreal: *See*—
Vanlerberghe, Guy; and Sebag, Henri, 4,584,196, Cl. 424-70.000.

Lorraine, Anthony J. Number-combination selector. 4,583,736, Cl. 273-144.00B.

Lotz, Horst K., to Aute Gesellschaft fur autogene Technik mbH. Nozzle for cutting beard removal. 4,583,718, Cl. 266-48.000.

Louis, Bernard: *See*—
Bichot, Bernard; Lemaignen, Henri; and Louis, Bernard, 4,583,697, Cl. 242-55.100.

Lovalenti, Sam, to Owens-Illinois, Inc. Optical detection of radial reflective defects. 4,584,469, Cl. 250-223.00B.

Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, to Block Drug Co., Inc. Polyoxyethylene derivatives as antipruritic ectoparasiticide. 4,584,319, Cl. 514-547.000.

Lozar, Boris, to General Electric Company. High resolution electronic automatic imaging and inspecting system. 4,583,854, Cl. 356-237.000.

LTV Steel: *See*—
Thomas, Albert M., 4,583,389, Cl. 72-402.000.

Lubowitz, Hyman R.; and Sheppard, Clyde H., to Boeing Company, The; and TRW, Inc., a part interest to each. Phenolic-capped imide sulfone resins. 4,584,364, Cl. 528-128.000.

Lubrizol Corporation, The: *See*—
Davis, Kirk E., 4,584,115, Cl. 252-49.600.
Walsh, Reed H., 4,584,113, Cl. 252-45.000.

Lucas Industries, plc: *See*—
Duesbury, Paul G., 4,583,819, Cl. 350-96.210.

Lucas Industries public limited company: *See*—
Gaskell, David J., 4,583,687, Cl. 239-118.000.
Greeves, Godfrey; and Lakra, Paul, 4,583,507, Cl. 123-425.000.

Lucht Engineering, Inc.: *See*—
Lucht, Orren J.; and Bartz, Stephen A., 4,583,845, Cl. 355-46.000.

Lucht, Orren J.; and Bartz, Stephen A., to Lucht Engineering, Inc. Photographic printer. 4,583,845, Cl. 355-46.000.

Ludwig, Hans: *See*—
Hinrichs, Walter; Lange, Ludwig; Hammer, Friederich; and Ludwig, Hans, 4,584,068, Cl. 204-68.000.

Luke, John A., to British-American Tobacco Company Limited. Marking of smoking article wrappings. 4,583,558, Cl. 131-284.000.

Lund, Earl A. E.: *See*—
Basu, Rajat S.; Lund, Earl A. E.; Pham, Hang T.; Wilson, David P.; and Magid, Hillel, 4,584,122, Cl. 252-171.000.

Lundberg, Robert D.; Peiffer, Dennis G.; and Duvdevani, Ilan, to Exxon Research and Engineering Co. Dilatant behavior of interpolymer complexes in aqueous solution. 4,584,339, Cl. 524-516.000.

Lundmark, Lorentz, to Skega AB. Wear means for drum barker. 4,583,575, Cl. 144-208.00B.

Lunova, Casper P.: *See—*
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Lupul, Francis T.: *See—*
Brown, William W., Jr.; Curry, Wayne J.; Dahlke, Gerhard P.; Lupul, Francis T.; and Totta, Paul A., 4,583,488, Cl. 118-500.000.

Lurssen, Klaus: *See—*
Holmwood, Graham; Lurssen, Klaus; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,584,373, Cl. 544-225.000.

Luthy, Christoph, to Hoffmann-La Roche Inc. Pyrimidylmethyl thiophosphorus esters useful for the control of insects, mites and nematodes. 4,584,295, Cl. 514-86.000.

Lyman, Richard R.; and Taylor, Robert W., to Lear Siegler, Inc. Method of making a containment vessel. 4,584,041, Cl. 156-156.000.

Lynch, Donald M.: *See—*
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,584,319, Cl. 514-547.000.

Lyyra, Hannu P. K. Feeding assembly for feeding books or book blanks at regular intervals onto a conveyor belt. 4,583,632, Cl. 198-407.000.

M/A-Com, Inc.: *See—*
Hines, Marion E.; Bielawa, Robert J.; and Geoffroy, Robert O., 4,583,556, Cl. 128-804.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Gronert, Heinz; Eckert, Manfred; Munich, Johann; von Petersdorff, Henning; Mix, Manfred; and Radtke, Wulf, 4,583,519, Cl. 126-418.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Abendroth, Paul; Dettinger, Dietrich; Holl, Roland; and Schales, Wolfgang, 4,583,459, Cl. 101-217.000.
Mathes, Josef, 4,583,728, Cl. 271-268.000.

M&T Chemicals Inc.: *See—*
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Macek, George L. Projectile catapult and amusement device. 4,583,743, Cl. 273-368.000.

MacGregor, Douglas; Mothersole, David S.; and Zolnowsky, John, to Motorola, Inc. Method and apparatus for a compare and swap instruction. 4,584,640, Cl. 364-200.000.

MacGregor, Douglas B.: *See—*
Zolnowsky, John; Rupp, Edward J.; and MacGregor, Douglas B., 4,584,666, Cl. 364-900.000.

Machida, Yoshihiro; Itoi, Isamu; Imai, Seigo; and Inui, Kozo, to Dainippon Screen Mfg. Co., Ltd. Printing apparatus. 4,583,838, Cl. 355-102.000.

Machinefabriek A. Wijnveen B.V. Ede: *See—*
Locker, Jan A. K., 4,583,415, Cl. 74-207.000.

MacInnis, Alexander G.; and Nunnery, William B., to International Business Machines Corp. Flux centering and power control for high frequency switching power. 4,584,635, Cl. 363-25.000.

Mackamul, Kevin K.; Morel, Don L.; and Tanner, David P., to Atlantic Richfield Company. Thin film solar cell with free tin of tin oxide transparent conductor. 4,584,427, Cl. 136-256.000.

MacLaughlin, Donald N., to Vercon, Inc. Container with improved sealing lip. 4,583,656, Cl. 220-359.000.

MacLaughlin, Donald N.: *See—*
Fortuna, Vincent E.; and MacLaughlin, Donald N., 4,584,037, Cl. 156-69.000.

Madonia, Ciro. Framing system. 4,583,878, Cl. 403-402.000.

Madono, Osamu. Method of accelerating the breakdown of phenolic resin bonded cores. 4,584,328, Cl. 523-145.000.

Maeda, Hirohumi; Fukasawa, Yoshiro; and Kobayashi, Makoto, to Japan Spectroscopic Co., Ltd. Ratio type double-beam spectrophotometer. 4,583,853, Cl. 356-323.000.

Maeda, Kazuo: *See—*
Sakai, Takashi; Maeda, Kazuo; Kawabata, Masuo; and Kono, Mituo, 4,583,560, Cl. 131-336.000.

Maeda, Minoru: *See—*
Iwasaki, Masayuki; Maeda, Minoru; and Shinozaki, Fumiaki, 4,584,260, Cl. 430-288.000.

Maekawa, Toshikazu: *See—*
Soneda, Mitsuo; Maekawa, Toshikazu; and Ohtsu, Takaji, 4,584,608, Cl. 358-212.000.

Maeyama, Sadao: *See—*
Suzuki, Masakuni; Maeyama, Sadao; Arai, Kiyoshi; Kaneko, Yoshio; and Fujito, Shohgo, 4,584,601, Cl. 358-80.000.

Magatti, Charles V.: *See—*
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Magid, Hillel: *See—*
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Magnet, Jean-Louis, to Societe d'Etudes de Machines Thermiques S.E.M.T., S.A. Method of changing the direction of rotation of an internal combustion engine, and an engine applying the method. 4,583,498, Cl. 123-41.00R.

Magnuson, Larry R.: *See—*
Tolliver, Wilbur E.; and Magnuson, Larry R., 4,583,744, Cl. 273-404.000.

Mahurkar, Sakharam D. Smooth bore double lumen catheter. 4,583,968, Cl. 604-43.000.

Maier, Hans-Peter: *See—*
Muller, Siegfried; and Maier, Hans-Peter, 4,583,988, Cl. 8-543.000.

Maire, Jacques: *See—*
Touzain, Philippe; Yazami, Rachid; and Maire, Jacques, 4,584,252, Cl. 429-209.000.

Malcom, Lawrence L.; Daniel, Dale M.; Jamison, Conny M.; and Landesman, Robert E., to Medmetric Corporation. Knee ligament testing system. 4,583,555, Cl. 128-782.000.

Mallinckrodt, Diagnostica (Holland) B.V.: *See—*
Wenzel, Martin; Schachschneider, Gert; and Nielsen, Jan, 4,584,186, Cl. 424-1.100.

Malmin, Oscar, to Hills Family Preservation Trust. Hair replacement apparatus. 4,583,540, Cl. 128-330.000.

Maloney, John M.: *See—*
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Mamouni, Ahmed: *See—*
Chive, Maurice; Constant, Eugene; Leroy, Yves; Mamouni, Ahmed; Robillard, Michele; and Van de Velde, Jean-Claude, 4,583,869, Cl. 374-122.000.

Manabe, Shunichi: *See—*
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Manber, Solomon: *See—*
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Mandell, Leo: *See—*
Turunen, Olli; Huttunen, Jouko; Ekman, Kurt; Eklund, Vidar; and Mandell, Leo, 4,583,984, Cl. 8-125.000.

Mandle, Robert J.: *See—*
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Manghisi, Elso; and Salimbeni, Aldo, to Istituto Luso Farmaco d'Italia S.p.A. 3-(3-Hydroxybutoxy)-1-butanol in pharmaceutical compositions. 4,584,321, Cl. 514-722.000.

Mani, Krishnamurthy N.: *See—*
Chlanda, Frederick P.; and Mani, Krishnamurthy N., 4,584,077, Cl. 204-182.400.

Mann, Egon; and Eymuller, Helmut, to Zahnradfabrik Friedrichshafen AG. Compact hydraulic drive mechanism for wheel assemblies. 4,583,425, Cl. 74-730.000.

Mannesmann Aktiengesellschaft: *See—*
Grutzner, Gunter, 4,584,031, Cl. 148-12.00E.

Manoli, Samir. ECG electrode pad. 4,583,549, Cl. 128-640.000.

Mantlik, Konrad, to Grote & Hartmann GmbH & Co. KG. Locking arrangement for electrical contact element insertable into housing chamber. 4,583,805, Cl. 339-61.00R.

Manusch, Christoph; and Scholz, Gunter, to Pelikan Aktiengesellschaft. Method of nib attachment. 4,583,875, Cl. 401-133.000.

Manville Sales Corporation: *See—*
Jada, Sivananda S.; and Bauer, Jon F., 4,584,365, Cl. 528-271.000.

Manville Service Corporation: *See—*
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MAP Mikrofilm Apparatebau Dr. Poehler GmbH & Co KG: *See—*
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Marelco Power Systems: *See—*
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Marelli Autronica S.p.A.: *See—*
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Margraf, Dallas A.: *See—*
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Maria, Edmond: *See—*
Franzolini, Marc; Maria, Edmond; Vanderschaeghe, Alain; and Bezier, Jean, 4,583,588, Cl. 165-173.000.

Marina, Semen I.: *See—*
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Ertli, Alisa A.; Marina, Semen I.; Avxentiev, Anatoly G.; Lepetchenko, Stanislav N.; and Serzhantu, Ivan P., 4,583,977, Cl. 604-174.000.

Marion, Robert H.: *See—*
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Mark, H. Wayne: *See—*
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Mark Telephone Products, Inc.: *See—*
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Marko, Paul D.; Kneisel, Thomas F.; and Garay, Oscar M., to Motorola, Inc. Two element low profile antenna. 4,584,585, Cl. 343-702.000.

Marsden, James G.: *See—*
Pepe, Enrico J.; and Marsden, James G., 4,584,138, Cl. 260-404.500.

Marsh, Richard L.; and Wetzel, Robert E., to Dayco Corporation. Belt construction having enhanced tooth strength. 4,583,963, Cl. 474-205.000.

Marshall, Norman B., to Upjohn Company, The. Method of treating ischemic states. 4,584,315, Cl. 514-456.000.

Marsocci, Angelo A.: *See—*
Powers, Robert B.; Adams, Donald; and Marsocci, Angelo A., 4,584,485, Cl. 250-574.000.

Marston, Robert K.: *See—*
DuBose, J. Timothy; Hale, David L.; and Marston, Robert K., 4,584,540, Cl. 332-9.00R.

Martens, Edward J.; and Schuebel, Gerald H., to S. C. Johnson & Son, Inc. Package for dispensing volatiles. 4,583,686, Cl. 239-35.000.

Martenson, Irvin W. Corrosion inhibiting method and plastic sheet material therefor. 4,584,175, Cl. 422-9.000.

Martin, Eugene R.: *See*—
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Martinez, Anthony J., to FMC Corporation. Nematicidal 2-(substituted thio)-4,5-dihydrothiazoles. 4,584,306, Cl. 514-369.000.
Martinez-Vera, Enrique R.: *See*—
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Maruo, Zenichi: *See*—
Tanaka, Kazunobu; and Maruo, Zenichi, 4,584,345, Cl. 525-67.000.
Marusho Kagaku K.K.K.: *See*—
Tokunaga, Yasuyuki; and Fukushima, Shozo, 4,584,044, Cl. 156-344.000.
Maruyama, Yoichiro: *See*—
Arisawa, Takashi; Maruyama, Yoichiro; Suzuki, Youji; and Iwamoto, Kazumi, 4,584,072, Cl. 204-157.220.
Maschek, Martin; and Mastner, Georg, to BBC Brown, Boveri & Co., Ltd. Analog/digital converter. 4,584,558, Cl. 340-347.0AD.
Maslin, Roger F.; and Rolfe, John D., to DRG (UK) Limited. Printing roll with detachable sleeves and kit therefor. 4,583,460, Cl. 101-375.000.
Mason, Bobby L.; and Bush, Hubert E., to Pace Incorporated. Fused eyeletting machine. 4,584,460, Cl. 219-150.00V.
Masse, Norman G.: *See*—
Gray, Thomas J.; Masse, Norman G.; Huang, Tai-Nang; and Morgan, Michael J., 4,584,139, Cl. 260-409.000.
Mast, Milford S., to Advanced AG Systems, Inc. Automatic grain drying system. 4,583,300, Cl. 34-50.000.
Masters, William E.: *See*—
Hamilton, Don A.; and Masters, William E., 4,583,480, Cl. 114-347.000.
Masterson, Patrick A.: *See*—
Shelangoskie, Donald R.; Brown, Jack H.; Jacobsen, Eric K.; Masterson, Patrick A.; Pierce, Ricky A.; Rogers, Barry A.; and Valentine, Lawrence J., 4,583,336, Cl. 52-250.000.
Mastner, Georg: *See*—
Maschek, Martin; and Mastner, Georg, 4,584,558, Cl. 340-347.0AD.
Masuda, Shinichi: *See*—
Tejima, Tohru; Nakamura, Koichi; Hattori, Michihiro; Masuda, Shinichi; Imokawa, Genji; and Takaishi, Naotake, 4,584,190, Cl. 424-59.000.
Masuda, Yoshimichi: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, 4,584,171, Cl. 419-8.000.
Masugi, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,584,290, Cl. 514-206.000.
Masukawa, Toyoaki; and Koshizuka, Kunihiro, to Konishiroku Photo Industry Co., Ltd. Thermally developable, light-sensitive material. 4,584,267, Cl. 430-619.000.
Masuko, Fujio: *See*—
Hamada, Kazuhiko; Suzukamo, Gohfu; Masuko, Fujio; and Nakamura, Makoto, 4,584,410, Cl. 568-436.000.
Masumoto, Tsuyoshi: *See*—
Nakanouchi, Yukio; Ohnuma, Shigehiro; and Masumoto, Tsuyoshi, 4,584,078, Cl. 204-192.00R.
Matey, James R., to RCA Corporation. Method of testing a panel assembly of a color cathode-ray tube. 4,584,481, Cl. 250-459.100.
Mather Company, The: *See*—
Hatch, Frederick R., 4,583,749, Cl. 277-152.000.
Mathes, Josef, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Auxiliary gripper drive. 4,583,728, Cl. 271-268.000.
Mathias, Jean-Marie: *See*—
Bocquet, Jacques R.; Goldhaber, Richard P.; Kersten, Jean; Mathias, Jean-Marie; and Pearson, Stephen, 4,583,971, Cl. 604-82.000.
Mathisson, Goran; and Santen, Sven, to Skf Steel Engineering AB. Method and apparatus for heating process air for industrial purposes. 4,584,465, Cl. 219-383.000.
Matix Industries (Societe Anonyme): *See*—
Line, Henri B., 4,583,893, Cl. 409-138.000.
Matlock, Paul L.: *See*—
Harding, Ronald H.; and Matlock, Paul L., 4,584,033, Cl. 148-14.000.
Matsuda, Kazuo: *See*—
Hoashi, Kenzo; Morita, Koichi; and Matsuda, Kazuo, 4,583,371, Cl. 60-426.000.
Matsuda, Takashi, to Takara Co., Ltd. Toy gun/robotic-humanoid assembly with bullet propelling apparatus. 4,583,958, Cl. 446-308.000.
Matsuda, Toshihiko: *See*—
Ohmae, Tsutomu; Matsuda, Toshihiko; and Tachikawa, Makoto, 4,584,528, Cl. 324-166.000.
Matsui, Kenji; and Teraoka, Fuminori, to Kabushiki Kaisha Toka-Rika-Denki-Seisakusho. Webbing retractor. 4,583,701, Cl. 242-107.40A.
Matsui, Minoru; and Takahashi, Tomonori, to NKG Insulators, Ltd. Method of producing a polycrystalline transparent spinel sintered body. 4,584,151, Cl. 264-65.000.
Matsumura, Mitsuma: *See*—
Mogaki, Tadahisa; Matsumura, Mitsuma; Nozawa, Nobuyuki; Kikuchi, Katsuji; Nakao, Haruki; and Mikiya, Toshio, 4,583,255, Cl. 5-453.000.
Matsuo, Tadashi; Iizuka, Yutaka; and Sato, Koei, to Nippon Kayaku Kabushiki Kaisha. Reactive disazo compound. 4,584,367, Cl. 534-634.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kusunoki, Shigeru; Nobue, Tomotaka; and Kashimoto, Takashi, 4,584,447, Cl. 219-10.55D.
Nakama, Yasutoshi; and Watanabe, Koji, 4,584,701, Cl. 381-63.000.
Tokunaga, Tomokazu; Kajino, Jirou; and Izaki, Masataka, 4,583,827, Cl. 350-429.000.
Yamashita, Kazuichi; Saito, Toshio; Zin, Keiichi; and Takemoto, Yoshiro, 4,583,909, Cl. 414-749.000.
Matsushita Electric Works, Ltd.: *See*—
Hata, Shunichi; Miyata, Makoto; and Kishi, Ichirou, 4,583,934, Cl. 425-376.00R.
Matsushita, Takashi: *See*—
Arakawa, Kazumi; Sugie, Masuo; Watanabe, Takashi; Nishio, Takumi; Kawamura, Toshio; Nagahata, Tsutomu; and Matsushita, Takashi, 4,583,721, Cl. 266-220.000.
Matsuura, Tamizo: *See*—
Hanaoka, Yuzuru; Murayama, Takeshi; Muramoto, Setsuo; and Matsuura, Tamizo, 4,584,276, Cl. 436-150.000.
Mattchen, Terry M., to Mattchen, Terry M. Hand-held pulsating jet lavage. 4,583,531, Cl. 128-66.000.
Mattei, Riccardo; and Belvederi, Bruno, to G.D Societa' per Azioni. Method and machine for the simultaneous manufacture of two continuous streams of cigarettes. 4,583,557, Cl. 131-84.100.
Mattel, Inc.: *See*—
Larsson, Ake L., 4,583,561, Cl. 132-9.000.
Matui, Katuo: *See*—
Ochiai, Izumi; Matui, Katuo; and Ayabe, Tadaaki, 4,583,675, Cl. 228-155.000.
Maxwell, Foy J. Firewood handler. 4,583,904, Cl. 414-453.000.
May, Adolf: *See*—
Blaschke, Gunter; May, Adolf; Bucking, Hans-Walter; and Wallhausser, Karl H., 4,584,121, Cl. 252-106.000.
Mayer, Thomas; Boling, Norman L.; and Rancourt, James D., to Burroughs Corporation. Coated media for optical recording with acrylic overcoat. 4,584,259, Cl. 430-273.000.
Maynard, Walter P., Jr. Pouring spout for diverse liquid containers. 4,583,668, Cl. 222-529.000.
Mazda Motor Corporation: *See*—
Aoki, Shigehiko; Onotani, Shizuo; Shimotaka, Toshinobu; and Nakamura, Yoshitaka, 4,583,768, Cl. 285-41.000.
Mazzola, Mario: *See*—
Cafiero, Luca; Mazzola, Mario; and Prati, Massimo, 4,584,690, Cl. 375-18.000.
MCC Associates: *See*—
Chu, Mosi; Chiang, David; and Manber, Solomon, 4,583,872, Cl. 400-625.000.
McClintock, Jack M., to Morgan Adhesives Company. Composite pressure sensitive adhesive construction. 4,584,217, Cl. 428-40.000.
McCollum, John D.; and Wolff, William F., to Standard Oil Company (Indiana). Method for treating shale. 4,584,088, Cl. 208-11.0LE.
McCormick, Charles L.; and Blackmon, Kenneth P., to University of Southern Mississippi. Calcium-tolerant N-substituted acrylamides as thickeners for aqueous systems. 4,584,358, Cl. 526-240.000.
McCormick, Daniel F., to Brunswick Corp. Marine drive expanding clutch. 4,583,628, Cl. 192-76.000.
McCourt, William A. Sponge bath and rinse platform. 4,583,252, Cl. 4-584.000.
McCoy, Bruce E.: *See*—
Goldberg, Joshua I.; Lardiere, Benjamin G., Jr.; McCoy, Bruce E.; and Riter, John J., Jr., 4,584,707, Cl. 455-41.000.
McCulloch Corporation: *See*—
Pilatowicz, Edward J., 4,583,291, Cl. 30-383.000.
McCurry, Lynn E.: *See*—
Nalewajek, David; McCurry, Lynn E.; Friedland, David J.; and Eibeck, Richard E., 4,584,184, Cl. 423-15.000.
McDaniel, James E.; and Smith, Kenneth R, to Geometrics, Inc. Floating point digitizer. 4,584,560, Cl. 340-347.0AD.
McDevitt, John E.; and Senor, Ronald E., to Augat Inc. Combination insertion-extraction tool for integrated circuits. 4,583,287, Cl. 29-741.000.
McDonald, Samuel G.; and Sabol, George P., to Westinghouse Electric Corp. Zirconium alloy products and fabrication processes. 4,584,030, Cl. 148-11.50F.
McDonnell Douglas Corporation: *See*—
Dietrich, John J.; Steinmeyer, Donald A.; and Hartmann, Dirck T., 4,583,520, Cl. 126-424.000.
Vitale, Mario L.; and Finazzo, Victor A., 4,584,226, Cl. 428-105.000.
McGarry, Phillip E.; and Herman, David E., to Standard Oil Company, The. Method for the beneficiation of low rank coal. 4,583,990, Cl. 44-51.000.
McKay, Dwight L.: *See*—
Bertus, Brent J.; Mark, H. Wayne; and McKay, Dwight L., 4,584,283, Cl. 502-31.000.
McLoughlin, Bernard J.: *See*—
Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., 4,584,298, Cl. 514-242.000.
McMills, Corey J., to Raychem Corporation. Mechanical coupling assembly for a coaxial cable and method of using same. 4,583,811, Cl. 339-177.00R.
McMullin, Craig W.; and Weismantel, Steven E., to Combustion Engineering, Inc. Valve control for low temperature overpressure protection in a nuclear power plant. 4,584,164, Cl. 376-216.000.

McNeilab, Inc.: *See*—
Hageman, William E.; and Zelesko, Michael J., 4,584,302, Cl. 514-324.000.

McNeill, William H.: *See*—
Chen, Yung-Jui; Carter, Gary M.; and McNeill, William H., 4,583,818, Cl. 350-96.190.

MD-Organocell Gesellschaft fuer Zellstoff- und Umwelttechnik mbH: *See*—
Edel, Eugen; Feckl, Josef; Grambow, Clemens; Huber, Albert; and Wabner, Dietrich, 4,584,076, Cl. 204-182.400.

Meader, Arthur L., Jr., to Chevron Research Company. Patch for urethane-based membrane and method. 4,584,233, Cl. 428-290.000.

Measurement Systems, Inc.: *See*—
Newman, John W., 4,584,676, Cl. 367-108.000.

Medicomp, Inc.: *See*—
Shah, Atul P.; Reuss, James L.; Guckert, Toni; and Clesius, Jeffrey J., 4,583,553, Cl. 128-704.000.

Medmetric Corporation: *See*—
Malcom, Lawrence L.; Daniel, Dale M.; Jamison, Conny M.; and Landesman, Robert E., 4,583,555, Cl. 128-782.000.

Medpar II: *See*—
Mittelman, Jonathan S.; and Romine, John S., 4,583,554, Cl. 128-774.000.

Meier, Hans-Jurgen, to Carl-Zeiss-Stiftung. Edge supporting system for a telescope mirror. 4,583,829, Cl. 350-609.000.

Meinan Machinery Works, Inc.: *See*—
Iwamoto, Masakuni, 4,584,222, Cl. 428-57.000.

Melbye, Kenneth M., to Kroy Inc. Laminated tape. 4,584,220, Cl. 428-42.000.

Melocik, Grant C.: *See*—
Wiblin, Wayne T.; Surma, Ronald D.; and Melocik, Grant C., 4,584,472, Cl. 250-237.00G.

Menju, Akira: *See*—
Hagiwara, Michiaki; Menju, Akira; Nomura, Kouhachi; and Nakamura, Akio, 4,584,034, Cl. 148-31.000.

Mennemann, Karl: *See*—
Grabowski, Danuta; Ross, Ludwig; Geiler, Volkmar; Mennemann, Karl; and Gliemeroth, Georg, 4,584,279, Cl. 501-78.000.

Menon, Narandranath, to General Electrodynamics Corporation. Load cell with lateral restraining member. 4,583,606, Cl. 177-208.000.

Mercier, Marc: *See*—
Toulhoat, Herve ; Plumail, Jean-Claude; Mercier, Marc; and Jacquin, Yves, 4,584,093, Cl. 208-216.00R.

Merck & Co., Inc.: *See*—
Ruyle, William V., 4,584,294, Cl. 514-214.000.
Sletzinger, Meyer; Verhoeven, Thomas R.; and Volante, Ralph P., 4,584,389, Cl. 549-292.000.

Merker, David E.: *See*—
Bibb, Henry Q.; Merker, David E.; and Stark, Louis E., 4,583,672, Cl. 228-2.500.

Merrell Dow Pharmaceuticals Inc.: *See*—
Wagner, Eugene R., 4,584,379, Cl. 546-147.000.

Merrick, Stanley J.; and Miller, Robert F., to Teledyne Industries, Inc. Spray transfer self-shielded tubular composite hard surfacing electrode. 4,584,459, Cl. 219-146.100.

Merten, Gerhard: *See*—
Breuer, Oswald; Merten, Gerhard; Steinkuhl, Bernd; and Rassmann, Christoph, 4,583,785, Cl. 299-34.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Eschenfelder, Peter; and Quentin, Jorg, 4,583,891, Cl. 409-120.000.

Messinger, Emanuel. Multi-copy self-stick label set. 4,583,765, Cl. 282-9.00R.

Metallgesellschaft AG: *See*—
Divisek, Jiri; Schmitz, Heinz; and Wullenweber, Heinz, 4,584,065, Cl. 204-11.000.

Metallwarenfabrik Twick & Lehrke KG: *See*—
Brinkmann, Ulrich, 4,584,632, Cl. 362-133.000.

Mettler Electronics Corporation: *See*—
Briggs, James B., 4,583,529, Cl. 128-24.00A.

Mettler, Fred A., Jr.: *See*—
Hylarides, Mark D.; and Mettler, Fred A., Jr., 4,584,137, Cl. 260-397.500.

Metz, Werner A., Jr.; and Hayworth, Hubert O., to NCR Corporation. Twin well single mask CMOS process. 4,584,027, Cl. 148-1.500.

Meuret, Paul V., to Societe a Responsabilite Limitee Datome. Rotational moulding machine. 4,583,932, Cl. 425-182.000.

Mibelli, Joseph F.: *See*—
Bello, Ernesto; and Mibelli, Joseph F., 4,584,623, Cl. 361-90.000.

Michael, Ewald, to Siemens Aktiengesellschaft. Integrated dynamic write-read memory. 4,584,670, Cl. 365-149.000.

Michel, Rudolf: *See*—
Panster, Peter; Michel, Rudolf; Buder, Wolfgang; and Kleinschmit, Peter, 4,584,395, Cl. 556-479.000.

Michelotti, Guido, to Campagnolo S.P.A. Slanting bushes for rims of bicycle wheels. 4,583,787, Cl. 301-58.000.

Middleton, Francisco A.: *See*—
Carter, Nicholas J. R.; Middleton, Francisco A.; and Das, Santanu, 4,584,680, Cl. 370-96.000.

Mielenz, William R. Method and apparatus for exposing color correction masks and color separation negatives. 4,583,849, Cl. 355-88.000.

Miki, Isao; Nagi, Tsutomu; and Kattoh, Haruyasu, to Nippon Light Metal Co., Ltd. Method of die casting. 4,583,579, Cl. 164-457.000.

Mikiya, Toshio: *See*—
Mogaki, Tadahisa; Matsumura, Mitsuma; Nozawa, Nobuyuki; Kikuchi, Katsuji; Nakao, Haruki; and Mikiya, Toshio, 4,583,255, Cl. 5-453.000.

Mikuniya, Kunio, to Tachikawa Spring Co., Ltd. Mounting structure of a seat for vehicles. 4,583,782, Cl. 297-440.000.

Miley, Bradford A. Handwheel actuated machine tool mechanism. 4,583,420, Cl. 74-557.000.

Miller, Bruce J., to System Development Corp. Fiber optic workstation datalink interface. 4,584,719, Cl. 455-608.000.

Miller, Conrad E., to Du Pont de Nemours, E. I., and Company. Process of making post-stretch polyester terpolymer resin subs for polyester supports for photographic elements. 4,584,262, Cl. 430-533.000.

Miller, John A., to Celotex Corporation, The. Apparatus for depositing granules on a moving sheet. 4,583,486, Cl. 118-308.000.

Miller, Robert F.: *See*—
Merrick, Stanley J.; and Miller, Robert F., 4,584,459, Cl. 219-146.100.

Miller, William S.: *See*—
Gray, Alan; and Miller, William S., 4,584,173, Cl. 420-533.000.

Mills, Stuart D.: *See*—
Brown, David; Hargreaves, Rodney B.; McLoughlin, Bernard J.; and Mills, Stuart D., 4,584,298, Cl. 514-242.000.

Minakawa, Masaaki: *See*—
Kami, Yozo; Minakawa, Masaaki; and Kubo, Kanji, 4,583,759, Cl. 280-673.000.

Minarik, Ronald W.: *See*—
List, William F.; and Minarik, Ronald W., 4,584,689, Cl. 372-55.000.

Minigrip, Inc.: *See*—
Ausnit, Steven, 4,584,706, Cl. 383-37.000.

Ministry of Defence: *See*—
Hunt, Trevor M.; and Bowns, Desmond E., 4,583,396, Cl. 73-61.00R.

Ministry of International Trade and Industry: *See*—
Saito, Kiyoshi; and Nanba, Mitsuo, 4,584,421, Cl. 585-241.000.

Minnesota Mining and Manufacturing Company: *See*—
Braun, David L., 4,583,911, Cl. 415-116.000.
Dell, John D.; and Andrus, Milton H., Jr., 4,584,192, Cl. 424-81.000.
Fisch, Richard S., 4,584,615, Cl. 358-332.000.

Minolta Camera Kabushiki Kaisha: *See*—
Nakamura, Hiromu; Ueda, Toshihiko; Hyodo, Haruhiro; Kuroda, Muneo; Hamada, Akiyoshi; Nakauchi, Hiroaki; and Kanai, Nobuo, 4,583,846, Cl. 355-52.000.

Minor, Thomas H., to Remo, Inc. Drum latch assembly. 4,583,442, Cl. 84-413.000.

Minsky, Norman C., to Dart Industries, Inc. Container with lid. 4,583,653, Cl. 220-300.000.

Mintchev, Pavel M.; Angelov, Mihail H.; Hristov, Hristomir D.; Balinov, Stoimen S.; and Yordanov, Nikolay V., to Institute po Metaloznanie i Technologia na Metalite. Apparatus for soldering the winding to the commutator of an electric machine. 4,583,673, Cl. 228-37.000.

Minter, Mearl, to Rolscreen Company. Room addition construction. 4,583,333, Cl. 52-90.000.

Mira Lanza s.p.a.: *See*—
Nistri, Ugo; Baroffio, Romano; and Ghisu, Giuseppe, 4,583,698, Cl. 242-56.00R.

Mistyurik, John D.: *See*—
Hamisch, Paul H., Jr.; and Mistyurik, John D., 4,584,048, Cl. 156-384.000.

Mita Industrial Co., Ltd.: *See*—
Ohata, Yosuke; and Hyodo, Keiichiro, 4,583,843, Cl. 355-3.0DD.

Mitchell, William A., to Ex-Cell-O Corporation. High speed motorized spindle with tool clamping/unclamping mechanism. 4,583,894, Cl. 409-233.000.

Mitsubishi Acetate Co., Ltd: *See*—
Sakai, Takashi; Maeda, Kazuo; Kawabata, Masuo; and Kono, Mituo, 4,583,560, Cl. 131-336.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Akasofu, Kyosuke, 4,584,638, Cl. 364-136.000.
Higashino, Shigenori; Shikano, Yoshiro; and Katsuki, Kanji, 4,584,518, Cl. 323-224.000.
Ito, Sho; Nakaguchi, Tomoyuki; Kasahara, Kumio; Takei, Toshio; Hashimoto, Tsutomu; and Nakahara, Shojiro, 4,583,733, Cl. 273-26.00R.
Iwaki, Yoshiyuki, 4,584,516, Cl. 322-99.000.
Niino, Shuhei; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,583,384, Cl. 72-8.000.
Sasaki, Yoshio, 4,583,375, Cl. 62-341.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Kumagai, Naotake; Tatemoto, Minoru; Itoh, Yoji; and Inuzuka, Tokushige, 4,583,503, Cl. 123-192.00R.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Watabe, Shin, 4,583,684, Cl. 236-78.00D.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Tamura, Yutaka; and Tanaka, Ryohei, 4,584,331, Cl. 529-119.000.

Mitsui Petrochemical Industries, Inc.: *See*—
Nagano, Riichiro, 4,584,348, Cl. 525-207.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Komoto, Nobuo; Arai, Kiyoshi; and Hirose, Setsuko, 4,584,311, Cl. 514-399.000.

Mitsumori, Masahito; Hamabe, Kenji; and Kaneda, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Vane structure for vane type air pumps. 4,583,926, Cl. 418-137.000.

Mittelman, Jonathan S.; and Romine, John S., to Medpar II. Knee ligament testing device. 4,583,554, Cl. 128-774.000.

Mitzel, Wilhelm; and Serester, Alexander, to GAO Gesellschaft fur Automation und Organisation mbH. Apparatus for testing data carriers. 4,583,398, Cl. 73-156.000.

Mix, Manfred: *See*—
Gronert, Heinz; Eckert, Manfred; Munich, Johann; von Petersdorff, Henning; Mix, Manfred; and Radtke, Wulf, 4,583,519, Cl. 126-418.000.

Miyadera, Kazuhiko: *See*—
Sasaki, Toshihiro; Nakagawa, Yasushi; Miyadera, Kazuhiko; and Hirota, Toyokazu, 4,583,448, Cl. 98-2.080.

Miyamoto, Yoshiyuki, to Nara Sports Co., Ltd. Ski boot. 4,583,305, Cl. 36-119.000.

Miyashita, Hiroichi: *See*—
Odaka, Takeo; and Miyashita, Hiroichi, 4,584,107, Cl. 210-760.000.

Miyata, Makoto: *See*—
Hata, Shunichi; Miyata, Makoto; and Kishi, Ichirou, 4,583,934, Cl. 425-376.00R.

Miyazawa, Hideyuki, to Ricoh Company, Ltd. Photoelectric element control system. 4,584,607, Cl. 358-209.000.

Mizokami, Kazunori; Kimura, Tadashi; Kikuchi, Juro; Tamagawa, Akira; Yunoki, Yutaka; and Nakamura, Kazuo, to Olympus Optical Co., Ltd. Electronic photographing apparatus. 4,584,610, Cl. 358-228.000.

Mizuno, Junzi: *See*—
Nakamura, Kazuharu; Nakanishi, Yutaka; and Mizuno, Junzi, 4,583,518, Cl. 126-201.000.

Mobil Oil Corporation: *See*—
Barile, George C.; and Kaeding, Warren W., 4,584,422, Cl. 585-467.000.
Blythe, James E.; Wiseman, Peter F.; and Carr, Daniel G., 4,583,642, Cl. 206-390.000.
Chen, Nai Y., 4,583,993, Cl. 48-197.00R.
Gemmill, Robert M.; Horodysky, Andrew G.; and Landis, Phillip S., 4,584,114, Cl. 252-47.500.
Uhri, Duane C., 4,583,784, Cl. 299-11.000.
Valyocsik, Ernest W., 4,584,286, Cl. 502-62.000.

Mobilio, Dominick; Demerson, Christopher A.; and Humber, Leslie G., to American Home Products Corporation. Substituted 2,3,4,9-tetrahydro-1H-carbazole-1-acetic acid, compositions and use. 4,584,312, Cl. 514-411.000.

Mobirolo S.p.A.: *See*—
Morellini, Franco, 4,583,335, Cl. 52-182.000.

Mobley, Joseph G., II, to Scientific Atlanta, Inc. Signal to noise ratio enhancement using baseband signals in an FM television system. 4,584,599, Cl. 358-36.000.

Mochizuki, Masami: *See*—
Suzuki, Shinichi; Mochizuki, Masami; and Suemitsu, Takashi, 4,584,552, Cl. 338-32.00H.

Moenaert, Christian: *See*—
Sussmeyer, Robert; Pluvinage, Alain; and Moenaert, Christian, 4,584,062, Cl. 202-197.000.

Mogaki, Tadahisa; Matsumura, Mitsuma; Nozawa, Nobuyuki; Kikuchi, Katsuji; Nakao, Haruki; and Mikiya, Toshio, to Nitto Kohki Co., Ltd. Massage arrangement of the pneumatic type. 4,583,255, Cl. 5-453.000.

Mohring, Gunter; and Block, Detlef, to Kabelmetal Electro GmbH. Antenna with feed horn and polarization feed. 4,584,588, Cl. 343-786.000.

Molex Incorporated: *See*—
Gillam, Paul T., 4,583,640, Cl. 206-328.000.

Mollard, Marc: *See*—
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Montalbano, Anthony P.; and Conroy, David E., to Biolectron, Inc. Access window assembly for a body cast. 4,583,550, Cl. 128-644.000.

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Montgomery, Richard C.; and Westerman, G. Wayne, to End Devices, Inc. Pump-off controller. 4,583,915, Cl. 417-26.000.

Moody, Harry A.; Skahen, Don H.; and Dunn, John C., to Dunham Tool Company, Inc., The. Adjustable tool holder for lathes and the like. 4,583,434, Cl. 82-36.00R.

Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Mixture of one or more t-mercapto terpene isomers and α-terpineol organoleptic uses thereof. 4,584,128, Cl. 252-522.00R.

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Morimoto, Hideyuki, to Nippon Air Brake Co., Ltd. Pneumatic booster. 4,583,446, Cl. 91-369.00A.

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Morioka, Mikio; and Shimizu, Atsushi, to Sumitomo Electric Industries, Ltd. Single crystal of compound semiconductor of groups III-V with low dislocation density. 4,584,174, Cl. 420-555.000.

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Morrison, Herbert M., to Clairol Incorporated. Hairsetter for electrically heating flexible hair curlers. 4,584,462, Cl. 219-222.000.

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Nakama, Yasutoshi; and Watanabe, Koji, to Matsushita Electric Industrial Co., Ltd. Reverberator having tapped and recirculating delay lines. 4,584,701, Cl. 381-63.000.
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Nakayama, Hiroshi; and Sumi, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Selecting mechanism for vehicular transmission operating apparatus. 4,583,418, Cl. 74-475.000.
Nakayama, Hitoshi, to Honda Giken Kogyo Kabushiki Kaisha. Three wheel motorcycle with reverse mechanism. 4,583,613, Cl. 180-283.000.
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Kameda, Toshinori, 4,583,346, Cl. 53-431.000.
National Distillers and Chemical Corporation: *See—*
Blewett, Charles W.; and Turner, Stephen W., 4,584,140, Cl. 260-412.800.
Smith, David W., 4,584,322, Cl. 518-700.000.
National Gypsum Company: *See—*
Schneller, Joseph W., 4,584,224, Cl. 428-60.000.
National Semiconductor Corporation: *See—*
Wong, Hee; Balakrishnan, Ramanatha V.; and Schneider, Herb O., 4,584,695, Cl. 375-81.000.
Nationale Research Development Corporation: *See—*
Graham, Neil B., 4,584,188, Cl. 424-19.000.
Nausedas, Joseph A., to Union Carbide Corporation. Stuffing apparatus having casting article engaging and rotating means. 4,583,264, Cl. 17-41.000.
Nay, Daniel L.; and Berger, James K., to Pioneer Research, Inc. Programmable servo pattern generator. 4,584,619, Cl. 360-75.000.
NCR Corporation: *See—*
Metz, Werner A., Jr.; and Hayworth, Hubert O., 4,584,027, Cl. 148-1.500.
Porter, Warren W.; and Thies, Louis W., 4,583,808, Cl. 339-126.00R.
NEC Corporation: *See—*
Tomizawa, Yukio, 4,584,455, Cl. 219-121.0LH.
Watanabe, Hiroshi, 4,584,674, Cl. 365-230.000.
Neese, Gerald W.; and Dever, Scott M., to Purex Corporation. Box inner partition providing four cells. 4,583,677, Cl. 229-15.000.
Neese, Gerald W., to Purex Corporation. Extensible handle carton with leakage preventing flap structure. 4,583,681, Cl. 229-52.00A.
Nejez, Josef. Derivation device for the haul rope of a ropeway. 4,583,463, Cl. 104-189.000.
Nelson, Peter S.: *See—*
Chapman, John L., Jr.; La Valle, Thomas A.; and Nelson, Peter S., 4,583,954, Cl. 445-7.000.
Nelson, Robert E., to Gillette Company, The. Thermophotovoltaic technology. 4,584,426, Cl. 136-253.000.
Nelson, William A. Rigid and telescoping strut members connected by flexible tendons. 4,583,956, Cl. 446-119.000.
Neris Coal Export Co., Inc.: *See—*
Gruodis, Victor, 4,584,519, Cl. 323-245.000.
Neste Oy: *See—*
Turunen, Olli; Huttunen, Jouko; Ekman, Kurt; Eklund, Vidar; and Mandell, Leo, 4,583,984, Cl. 8-125.000.
Nestler, Walter: *See—*
Franz, Friedhelm; Nestler, Walter; Wobst, Eberhard; Kluge, Christian; Preussker, Egon; and Ulbrich, Gunther, 4,583,374, Cl. 62-210.000.
Neuenschwander, Victor L. Water-powered hydraulic motor. 4,583,368, Cl. 60-639.000.
Neuhaus, Detlev: *See—*
Hesse, Karl-Heinz; Liermann, Peter; and Neuhaus, Detlev, 4,584,487, Cl. 307-10.00R.
Neumann, Peter: *See—*
Sterzel, Hans-Josef; Sanner, Axel; and Neumann, Peter, 4,584,359, Cl. 526-241.000.
Neuray, Dieter: *See—*
Paul, Winfried; Nouvertne, Werner; Neuray, Dieter; Steinberger, Helmut; and Grape, Wolfgang, 4,584,360, Cl. 528-14.000.
Neustadt, Bernard R.: *See—*
Doll, Ronald J.; Neustadt, Bernard R.; Smith, Elizabeth M.; Magatti, Charles V.; and Gold, Elijah H., 4,584,285, Cl. 514-19.000.
Newman, John W., to Measurement Systems, Inc. Method of and apparatus for pipe length measurement. 4,584,676, Cl. 367-108.000.
NGK Spark Plug Co., Ltd.: *See—*
Hayakawa, Nobuhiro; Yamada, Masahiko; and Ishihara, Toshiyuki, 4,584,086, Cl. 204-429.000.
Nicholson, John P. Electrolyte potential measuring apparatus. 4,584,530, Cl. 324-425.000.
Nick, Charles F., to Dresser Industries, Inc. Electronic fuel control system for gas turbine. 4,583,360, Cl. 60-39.030.
Nickish, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; Beier, Sybille; and Elger, Walter, to Schering Aktiengesellschaft. 6,6-ethylene-15,16-methylene-3-oxo-17α-pregn-4-ene-21,17-carbolactones, processes for the production thereof, and pharmaceutical preparations containing them. 4,584,288, Cl. 514-172.000.
Nielsen, Broder, to W. R. Grace & Co., Cryovac Div. Vacuum packaging apparatus and process. 4,583,347, Cl. 53-434.000.
Nielsen, Jan: *See—*
Wenzel, Martin; Schachschneider, Gert; and Nielsen, Jan, 4,584,186, Cl. 424-1.100.
Niemann, Gary O. Fruit sizer. 4,583,644, Cl. 209-660.000.
Niess, Willi: *See—*
Dangel, Artur; Frech, Josef; Niess, Willi; Prillipp, Rolf, deceased; Riegert, Hermann; Wittlinger, Gerhard; and Anderl, Siegfried, 4,583,449, Cl. 99-279.000.
Nihon Bussan Kabushiki Kaisha: *See—*
Takasaki, Takashi; and Iwamoto, Mitsunori, 4,584,197, Cl. 424-95.000.
Nihon Sanka Kogo K.K.K.: *See—*
Tokunaga, Yasuyuki; and Fukushima, Shozo, 4,584,044, Cl. 156-344.000.
Nihon Tokushu Noyaku Seizo K.K.: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Moriya, Koichi, 4,584,396, Cl. 560-63.000.

Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, to National Aerospace Laboratories of Science & Technology Agency; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; and Sumitomo Electric Industries. Method of producing rocket combustors. 4,584,171, Cl. 419-8.000.

Niino, Shuhei; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, to Mitsubishi Denki Kabushiki Kaisha. Control device for continuous rolling machine. 4,583,384, Cl. 72-8.000.

Nilsson, Claes T.; and Jakobsen, Kjell M., to Petainer S.A. Method for producing a biaxially oriented container from a blank of thermoplastic material. 4,584,158, Cl. 264-529.000.

Nippon Air Brake Co., Ltd.: *See—*
Morimoto, Hideyuki, 4,583,446, Cl. 91-369.00A.

Nippon Furnace Kogyo Co., Ltd.: *See—*
Hirose, Yasuo, 4,583,470, Cl. 110-346.000.

Nippon Kayaku Kabushiki Kaisha: *See—*
Matsuo, Tadashi; Iizuka, Yutaka; and Sato, Koei, 4,584,367, Cl. 534-634.000.

Nippon Light Metal Co., Ltd.: *See—*
Miki, Isao; Nagi, Tsutomu; and Kattoh, Haruyasu, 4,583,579, Cl. 164-457.000.

Nippon Piston Ring Co., Ltd.: *See—*
Takahashi, Kentaro; Hiraoka, Takeshi; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,583,502, Cl. 123-90.390.

Nippon Soken, Inc.: *See—*
Tokura, Norihito; and Kawai, Hisasi, 4,584,553, Cl. 338-320.000.

Nippon Steel Corporation: *See—*
Ando, Narumi; Oda, Kito; Saiki, Takashi; Hashimoto, Yoshiaki; Tsuyuki, Akira; and Kitazawa, Yoshio, 4,584,066, Cl. 204-28.000.
Arai, Nobuichi; and Asano, Hidejiro, 4,584,035, Cl. 148-36.000.
Higuchi, Seizun; Asakawa, Kenichi; and Okada, Nobuyoshi, 4,584,211, Cl. 427-320.000.

Nishibori, Isao: *See—*
Nagasawa, Kunihiko; and Nishibori, Isao, 4,584,684, Cl. 371-33.000.

Nishida, Manabu: *See—*
Hirosaki, Yukihiro; Nishida, Manabu; and Sekioka, Kunikazu, 4,583,345, Cl. 53-77.000.

Nishii, Michiharu: *See—*
Tsubouchi, Kaoru; and Nishii, Michiharu, 4,583,366, Cl. 60-547.100.

Nishimura, Fuminobu: *See—*
Shimono, Mamoru; Hashimoto, Shinichi; and Nishimura, Fuminobu, 4,583,842, Cl. 355-3.0DD.

Nishimura, Tatsuo; Sugawara, Ryo; Ichitani, Takashi; and Obata, Susumu, to Taiyo Gyogyo Kabushiki Kaisha. Method for preparing a shrimp-like fish meat product. 4,584,204, Cl. 426-643.000.

Nishio, Takumi: *See—*
Arakawa, Kazumi; Sugie, Masuo; Watanabe, Takashi; Nishio, Takumi; Kawamura, Toshio; Nagahata, Tsutomu; and Matsushita, Takashi, 4,583,721, Cl. 266-220.000.

Nissan Motor Company, Limited: *See—*
Fukuhara, Hiroshige, 4,584,714, Cl. 455-297.000.
Kobayashi, Kyoji; Kato, Masaru; Fujisawa, Koichi; Nagamine, Yoshinori; and Nakajima, Fumio, 4,584,508, Cl. 318-483.000.
Kumura, Haruyoshi; Yamamuro, Sigeaki; Tanaka, Yoshikazu; Hirano, Hiroyuki; and Abo, Keiju, 4,583,627, Cl. 192-0.076.
Saegusa, Nobuo, 4,584,230, Cl. 428-218.000.

Nistri, Ugo; Baroffio, Romano; and Ghisu, Giuseppe, to Mira Lanza s.p.a. Web-winding machine for winding paper webs onto cardboard cores or the like. 4,583,698, Cl. 242-56.00R.

Nitto Boseki Co., Ltd.: *See—*
Kuroiwa, Katsumasa; Nakatsuyama, Shuichi; and Nagasawa, Takeshi, 4,584,398, Cl. 562-439.000.
Ueda, Toshio; Kageno, Kenzi; and Harada, Susumu, 4,583,989, Cl. 8-543.000.

Nitto Kohki Co., Ltd.: *See—*
Mogaki, Tadahisa; Matsumura, Mitsuma; Nozawa, Nobuyuki; Kikuchi, Katsuji; Nakao, Haruki; and Mikiya, Toshio, 4,583,255, Cl. 5-453.000.

NKG Insulators, Ltd.: *See—*
Matsui, Minoru; and Takahashi, Tomonori, 4,584,151, Cl. 264-65.000.

Nobue, Tomotaka: *See—*
Kusunoki, Shigeru; Nobue, Tomotaka; and Kashimoto, Takashi, 4,584,447, Cl. 219-10.55D.

Noda, Yasushi: *See—*
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,584,445, Cl. 200-144.00B.

Nogi, Hiroyoshi; and Ookawa, Hiroyuki, to Musashi Engineering Kabushiki Kaisha. Apparatus for counting the number of paper sheets. 4,583,726, Cl. 271-4.000.

Nojima, Shin-ichi, to Tokico Ltd. Flow meter. 4,583,400, Cl. 73-247.000.

Nold, William H.: *See—*
Engelmore, Anthony R.; and Nold, William H., 4,583,797, Cl. 339-6.00R.

Nomura, Kouhachi: *See—*
Hagiwara, Michiaki; Menju, Akira; Nomura, Kouhachi; and Nakamura, Akio, 4,584,034, Cl. 148-31.000.

Norden Laboratories, Inc.: *See—*
Bass, Edmund P.; and Sharpee, Richard L., 4,584,194, Cl. 424-89.000.

Nordischer Maschinenbau Rud. Baader GmbH & Co. Kg: *See—*
Kristinsson, Sigurdur, 4,583,265, Cl. 17-55.000.

Nordson Corporation: *See—*
Williams, Edward A.; and Hastings, Donald R., 4,583,694, Cl. 239-690.000.

Norigoe, Takashi: *See—*
Ochiai, Kuniaki; Norigoe, Takashi; and Komakine, Shigeo, 4,583,871, Cl. 400-124.000.

Norsk Hydro a.s.: *See—*
Myklebust, Eirik; Juel, Anders; and Rasmussen, Odd F., 4,584,705, Cl. 383-8.000.

North American Philips Consumer Electronics Corp.: *See—*
Day, James C., 4,584,500, Cl. 313-414.000.

Northern Engineering Industries PLC: *See—*
Lack, Geoffrey J., 4,583,413, Cl. 74-410.000.

Northern Telecom Limited: *See—*
Hines, William W., 4,584,624, Cl. 361-119.000.
Yataki, Masamichi, 4,583,851, Cl. 356-73.100.

Norton Company: *See—*
Darjee, Dhiraj H.; and Devine, Daniel E., 4,584,227, Cl. 428-113.000.

Nossen, Edward J., to RCA Corporation. Digital modulator with variations of phase and amplitude modulation. 4,584,541, Cl. 332-16.00R.

Nouvertne, Werner: *See—*
Paul, Winfried; Nouvertne, Werner; Neuray, Dieter; Steinberger, Helmut; and Grape, Wolfgang, 4,584,360, Cl. 528-14.000.

Novak, Brian A.: *See—*
Runion, Brett H.; Novak, Brian A.; and Horne, Gary, 4,583,758, Cl. 280-644.000.

Novatronics, Inc.: *See—*
Brauns, Frank; Walters, Charles S.; and Stuff, Thomas W., 4,584,578, Cl. 343-5.00R.

Nozato, Fujio. Ball throwing machine. 4,583,514, Cl. 124-78.000.

Nozawa, Nobuyuki: *See—*
Mogaki, Tadahisa; Matsumura, Mitsuma; Nozawa, Nobuyuki; Kikuchi, Katsuji; Nakao, Haruki; and Mikiya, Toshio, 4,583,255, Cl. 5-453.000.

Nozawa, Ryoichiro; and Kawamura, Hideaki, to Fanuc Ltd. Turning control apparatus and method. 4,583,433, Cl. 82-1.00C.

NRM Corporation: *See—*
Enders, George E., 4,584,038, Cl. 156-132.000.

Nunne, William H.: *See—*
Lee, Eddie C.; and Nunne, William H., 4,584,079, Cl. 204-192.00S.

Nunnery, William B.: *See—*
MacInnis, Alexander G.; and Nunnery, William B., 4,584,635, Cl. 363-25.000.

Nunning, Walter J.: *See—*
Chamberlin, John M.; Chilvers, Edward W., Jr.; Nunning, Walter J.; and Southern, John H., 4,583,357, Cl. 57-243.000.

Nusonics, Inc.: *See—*
O'Neil, Jeffrey C., 4,583,410, Cl. 73-861.280.

Obara, Kenjiroh: *See—*
Murakami, Yoshio; Obara, Kenjiroh; Abe, Tetsuya; Shimomura, Yasuo; and Shibata, Takemasa, 4,583,394, Cl. 73-40.700.

Obata, Susumu: *See—*
Nishimura, Tatsuo; Sugawara, Ryo; Ichitani, Takashi; and Obata, Susumu, 4,584,204, Cl. 426-643.000.

Ochi, Shigeki: *See—*
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, 4,584,171, Cl. 419-8.000.

Ochiai, Izumi; Matui, Katuo; and Ayabe, Tadaaki, to Hitachi, Ltd. Method of production of a part formed with an opening. 4,583,675, Cl. 228-155.000.

Ochiai, Kuniaki; Norigoe, Takashi; and Komakine, Shigeo, to Tokyo Electric Co., Ltd. Dot printer head with magnetic circuit through adjacent armatures. 4,583,871, Cl. 400-124.000.

Ocker, Jerold R.; and Crouse, Jere W., to Beloit Corporation. Method of filling calender/embosser rolls using vibrations. 4,583,966, Cl. 493-374.000.

Octanorm-Vertriebs-Gesellschaft mit beschrankter Haftung fur Bauelemente: *See—*
Staeger, Hans, 4,583,359, Cl. 52-721.000.

Oda, Kito: *See—*
Ando, Narumi; Oda, Kito; Saiki, Takashi; Hashimoto, Yoshiaki; Tsuyuki, Akira; and Kitazawa, Yoshio, 4,584,066, Cl. 204-28.000.

Oda, Noriyuki; Watanabe, Haruo; and Morishita, Tomohiro, to Asahi Glass Company Ltd. Apparatus for treating dust-containing gas. 4,584,003, Cl. 55-269.000.

Odaka, Takeo; and Miyashita, Hiroichi, to Sumitomo Metal Mining Company Limited. Method of treating effluents containing sulfur oxides. 4,584,107, Cl. 210-760.000.

Odozynski, John A., to GTE Communication Systems Corporation. Digital hysteresis for video measurement and processing system. 4,584,605, Cl. 358-107.000.

Oertel, Norbert: *See—*
Battig, Udo; Dittrich, Peter; Oertel, Norbert; Osterland, Guter; Rucknagel, Mathias; Scheler, Werner; and Schultz, Klaus, 4,583,847, Cl. 355-53.000.

Oettinger, Carl W.: *See—*
Oliver, James C.; and Oettinger, Carl W., 4,584,176, Cl. 422-41.000.

Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.): *See—*
Bernard, Alain M.; and Sacleux, Bernard, 4,583,404, Cl. 73-517.00B.
Officine Savio S.p.A.: *See—*
Badiali, Roberto, 4,583,356, Cl. 57-22.000.
Ogawa, Shigeru: *See—*
Yamaji, Hiroshi; Ogawa, Shigeru; and Okumura, Katsuya, 4,583,861, Cl. 356-446.000.
Ogawa, Yuichiro: *See—*
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Ogino, Takashi: *See—*
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,584,290, Cl. 514-206.000.
Ohata, Yosuke; and Hyodo, Keiichiro, to Mita Industrial Co., Ltd. Device for developing latent electrostatic image. 4,583,843, Cl. 355-3.0DD.
Ohba, Koichi: *See—*
Niino, Shuhei; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,583,384, Cl. 72-8.000.
Ohba, Osam: *See—*
Chih, Samuel; and Ohba, Osam, 4,584,653, Cl. 364-491.000.
Ohki, Nobutaka; and Yoshida, Yoshinobu, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive materials. 4,584,264, Cl. 430-542.000.
Ohlendorf, Dieter: *See—*
Haas, Raimund; Ohlendorf, Dieter; and Interthal, Werner, 4,584,109, Cl. 252-8.55D.
Ohly, Richard L., to Swing Plane Systems, Inc. Golf swing muscle training device. 4,583,740, Cl. 273-191.00A.
Ohmae, Tsutomu; Matsuda, Toshihiko; and Tachikawa, Makoto, to Hitachi, Ltd. Speed detecting method and apparatus. 4,584,528, Cl. 324-166.000.
Ohmori, Hideki: *See—*
Fujii, Tsunenori; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Koto, Kaoru; Ohmori, Hideki; Yokokura, Hisao; Okabe, Yoshiaki; Hattori, Shintaroo; Kitamura, Teruo; Mukoh, Akio; and Sato, Mikio, 4,584,120, Cl. 252-299.630.
Ohnuma, Shigehiro: *See—*
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Ohtsu, Takaji: *See—*
Soneda, Mitsuo; Maekawa, Toshikazu; and Ohtsu, Takaji, 4,584,608, Cl. 358-212.000.
Okabe, Yoshiaki: *See—*
Fujii, Tsunenori; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Koto, Kaoru; Ohmori, Hideki; Yokokura, Hisao; Okabe, Yoshiaki; Hattori, Shintaroo; Kitamura, Teruo; Mukoh, Akio; and Sato, Mikio, 4,584,120, Cl. 252-299.630.
Okada, Nobuyoshi: *See—*
Higuchi, Seizun; Asakawa, Kenichi; and Okada, Nobuyoshi, 4,584,211, Cl. 427-320.000.
Okamoto, Ken: *See—*
Niino, Shuhei; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,583,384, Cl. 72-8.000.
Okamoto, Kenji, to Diesel Kiki Co., Ltd. Electronically controlled type governor for diesel engines. 4,583,506, Cl. 123-357.000.
Okamura, Hisashi; and Sakakibara, Yoshio, to Fuji Photo Film Co., Ltd. Photographic elements containing naphthylsulfonylethylthio heterocycle developement inhibitor precursor. 4,584,257, Cl. 430-219.000.
Okano, Shinichi; Koizumi, Takashi; and Uekusa, Tadashi, to Fuji Photo Film Co., Ltd. Incubator. 4,584,275, Cl. 435-290.000.
Okawa, Hisashi: *See—*
Fujii, Tsunenori; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Koto, Kaoru; Ohmori, Hideki; Yokokura, Hisao; Okabe, Yoshiaki; Hattori, Shintaroo; Kitamura, Teruo; Mukoh, Akio; and Sato, Mikio, 4,584,120, Cl. 252-299.630.
Okubo, Akira: *See—*
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Okumura, Katsuya: *See—*
Yamaji, Hiroshi; Ogawa, Shigeru; and Okumura, Katsuya, 4,583,861, Cl. 356-446.000.
Olesen, Paul, to Swingline, Inc. Method of forming and driving staples. 4,583,276, Cl. 29-432.100.
Olin Corporation: *See—*
Gray, Thomas J.; Masse, Norman G.; Huang, Tai-Nang; and Morgan, Michael J., 4,584,139, Cl. 260-409.000.
Oliver, James C.; and Oettinger, Carl W. Method and apparatus for storing bicarbonate dialysate. 4,584,176, Cl. 422-41.000.
Olsen, Cathryn E.: *See—*
Webb, Jimmy L.; and Olsen, Cathryn E., 4,584,393, Cl. 556-407.000.
Olszewski, William V.: *See—*
LeGrand, Donald G.; and Olszewski, William V., 4,583,407, Cl. 73-762.000.
Olympus Optical Co., Ltd.: *See—*
Mizokami, Kazunori; Kimura, Tadashi; Kikuchi, Juro; Tamagawa, Akira; Yunoki, Yutaka; and Nakamura, Kazuo, 4,584,610, Cl. 358-228.000.
Nagasaki, Tatsuo, 4,584,606, Cl. 358-209.000.
Tanikawa, Kowji, 4,584,663, Cl. 364-900.000.
Omitsu, Takashi: *See—*
Frank, Andrew A.; and Omitsu, Takashi, 4,583,505, Cl. 123-198.00F.
O'Neil, Jeffrey C., to Nusonics, Inc. Timing circuit for acoustic flow meters. 4,583,410, Cl. 73-861.280.
Ong, Sienling, to Hoechst Aktiengesellschaft. Stable thickener dispersions which act as carriers. 4,584,124, Cl. 252-308.000.
Onik, Gary M.; Cosman, Eric R.; and Wells, Trent H. Method and apparatus for stereotaxic placement of probes in the body utilizing CT scanner localization. 4,583,538, Cl. 128-303.00B.
Ono, Yoshio, to Dainippon Screen Seizo Kabushiki Kaisha. Picture recording method. 4,584,612, Cl. 358-285.000.
Onohara, Kazuyuki: *See—*
Nagata, Yoshihiro; Onohara, Kazuyuki; Ukibe, Koji; and Kitani, Toshio, 4,583,791, Cl. 305-27.000.
Onotani, Shizuo: *See—*
Aoki, Shigehiko; Onotani, Shizuo; Shimotaka, Toshinobu; and Nakamura, Yoshitaka, 4,583,768, Cl. 285-41.000.
Ontario Research Foundation: *See—*
Sweet, Edmund G. F., 4,583,393, Cl. 73-32.00A.
Oodaira, Hirosi; Suzuki, Haruko; Saito, Masayuki; and Iwase, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Production of resistor from insulating material by local heating. 4,584,456, Cl. 219-121.0LM.
Ookawa, Hiroyuki: *See—*
Nogi, Hiroyoshi; and Ookawa, Hiroyuki, 4,583,726, Cl. 271-4.000.
Oonaka, Hidemi: *See—*
Urushidani, Masahiro; and Oonaka, Hidemi, 4,583,363, Cl. 60-276.000.
Optical Storage International: *See—*
Fritze, Keith R., 4,584,686, Cl. 371-37.000.
Optical Storage International-U.S.: *See—*
Howard, P. Guy, 4,584,687, Cl. 372-29.000.
Orain, Roger: *See—*
Bourelier, Claude; Daude, Gerard; and Orain, Roger, 4,584,229, Cl. 428-216.000.
Orgovan, Andrew J.: *See—*
Raketti, Raymond; Schreiber, Daniel; Orgovan, Andrew J.; Adair, George E.; and Burrage, Lawrence M., 4,584,429, Cl. 174-18.000.
Ortho Pharmaceutical Corporation: *See—*
Audhya, Tapan; Kroon, Daniel J.; Heavner, George; and Goldstein, Gideon, 4,584,284, Cl. 514-18.000.
Osaka, Hajime: *See—*
Namba, Hirokuni; Osaka, Hajime; Kamon, Koichi; and Higuchi, Fuminori, 4,584,053, Cl. 156-603.000.
Osgan, Maseh: *See—*
Bre, Anne; Mollard, Marc; and Osgan, Maseh, 4,584,215, Cl. 428-36.000.
Ostberg, Werner. Novelty bottle cap-toy top. 4,583,651, Cl. 215-228.000.
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Paddock, Paul W., to Floating Membranes, Inc. Audio transducer with controlled flexibility diaphragm. 4,584,439, Cl. 179-115.5PV.
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Palti, Yoram. Infusion devices. 4,583,979, Cl. 604-256.000.

Pan, Harry, to RCA Corporation. Phase correction arrangement for deflection circuit. 4,584,503, Cl. 315-370.000.

Pandolfi, Alberto, to Brevetti Gaggia S.p.A. Household ice-cream machine. 4,583,863, Cl. 366-149.000.

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Pankove, Jacques I.; and Carlson, David E., to RCA Corporation. Neutralization of acceptor levels in silicon by atomic hydrogen. 4,584,028, Cl. 148-1.500.

Panster, Peter; Michel, Rudolf; Buder, Wolfgang; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Method for preparation of 3-chloropropyl-trichlorosilane. 4,584,395, Cl. 556-479.000.

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Parhi, Seppo S. L., to Farmos Yhtyma-Oy. Substituted 2-mercapto-imidazoles and their preparation. 4,584,383, Cl. 546-278.000.

Paris, Jean, to Salomon S.A. Alpine ski boot. 4,583,306, Cl. 36-119.000.

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Parker, James G. Anti-pitch system for a motorcycle. 4,583,612, Cl. 180-227.000.

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Parks, Harville M.; Sobey, Philip W.; and Wilson, Bilson J., Jr., to International Business Machines Corporation. Printer with integral paper handling apparatus. 4,583,873, Cl. 400-629.000.

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Pepe, Enrico J.; and Marsden, James G., to Union Carbide Corporation. Novel fatty ethenoid acylaminoorganosilicon compounds and their use as a coupling agent. 4,584,138, Cl. 260-404.500.

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Permelec Electrode Ltd.: *See*—
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Portal, Charles; and Walter, James F., to W. R. Grace & Co. Purification of L-phenylalanine. 4,584,399, Cl. 562-443.000.
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Pritchard, Gloria C. Freezer/refrigerator and removable food module for use therein. 4,583,376, Cl. 62-382.000.
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Radtke, Wulf: *See—*
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Raketti, Raymond; Schreiber, Daniel; Orgovan, Andrew J.; Adair, George E.; and Burrage, Lawrence M., to Cooper Industries, Inc. Electrical assembly including a metal enclosure and a high voltage bushing. 4,584,429, Cl. 174-18.000.
Rammel, Gerald E., to Owens-Corning Fiberglas Corporation. Size compositions for glass fibers. 4,584,110, Cl. 252-8.800.
Rancourt, James D.: *See—*
Mayer, Thomas; Boling, Norman L.; and Rancourt, James D., 4,584,259, Cl. 430-273.000.
Ranganathan, Ramachandran: *See—*
Sovak, Milos; and Ranganathan, Ramachandran, 4,584,401, Cl. 564-153.000.
Rapp, Robert A.: *See—*
Ray, Siba P.; and Rapp, Robert A., 4,584,172, Cl. 419-34.000.
Rasmussen, Odd F.: *See—*
Myklebust, Eirik; Juel, Anders; and Rasmussen, Odd F., 4,584,705, Cl. 383-8.000.
Rassmann, Christoph: *See—*
Breuer, Oswald; Merten, Gerhard; Steinkuhl, Bernd; and Rassmann, Christoph, 4,583,785, Cl. 299-34.000.
Raugh, Michael R., to Hewlett-Packard Company. Auto calibration method suitable for use in electron beam lithography. 4,583,298, Cl. 33-502.000.
Rausch, Roger A., to Honeywell Inc. Mechanical meter tampering indicator. 4,583,483, Cl. 116-204.000.
Rautio, Kauko. Means for feeding a tree trunk. 4,583,576, Cl. 144-246.00E.
Rawlings, David L.; and Dillon, Michael A., to International Hydron Corporation. Method for the precision trimming of the edge of a centrifugally cast lens. 4,584,148, Cl. 264-2.100.
Ray, Siba P.; and Rapp, Robert A., to Aluminum Company of America. Method of making composition suitable for use as inert electrode having good electrical conductivity and mechanical properties. 4,584,172, Cl. 419-34.000.
Raychem Corporation: *See—*
Gen, Tamar G.; Biddick, Karen M.; and Hansen, Erling, 4,584,238, Cl. 428-349.000.
McMills, Corey J., 4,583,811, Cl. 339-177.00R.
Raytheon Company: *See—*
Kasevich, Raymond S., 4,583,589, Cl. 166-60.000.
Kliger, Isaac E., 4,584,584, Cl. 343-451.000.
Vinn, Charles L., 4,584,520, Cl. 323-316.000.
Razet, Jean-Claude: *See—*
Hermant, Marc; Basset, Dominique; and Razet, Jean-Claude, 4,584,116, Cl. 252-51.000.
RCA Corporation: *See—*
Elabd, Hammam, 4,584,523, Cl. 324-96.000.
Gumacos, Constantine, 4,584,694, Cl. 375-75.000.
Hettiger, James, 4,584,544, Cl. 333-174.000.
Klein, John J.; and Cantella, Michael J., 4,584,609, Cl. 358-213.000.
Matey, James R., 4,584,481, Cl. 250-459.100.
Nossen, Edward J., 4,584,541, Cl. 332-16.00R.
Pan, Harry, 4,584,503, Cl. 315-370.000.
Pankove, Jacques I.; and Carlson, David E., 4,584,028, Cl. 148-1.500.
Tallant, James C., II, 4,584,596, Cl. 358-10.000.
Timmons, William J., 4,584,449, Cl. 219-10.570.
Wu, Chung P.; and Schnable, George L., 4,584,026, Cl. 148-1.500.
Recht, Peter A.: *See—*
Schaumburg, Edward G.; Recht, Peter A.; and Frich, Mark R., 4,583,286, Cl. 29-730.000.
Recycloplast AG: *See—*
Weichenrieder, Erich, Sr., 4,583,748, Cl. 277-81.00R.
Redaelli, Claudio: *See—*
Tubaro, Aurelia; Della Loggia, Roberto; Banfi, Elena; Cinco, Marina; and Redaelli, Claudio, 4,584,198, Cl. 424-195.100.
Reddy, Redreddy S.; Filoni, Toussaint; Fletcher, Kenneth S.; Shaanan, Gad J.; and Walsh, Anthony J., to Vapor Corporation. Step lift for railway cars. 4,583,466, Cl. 105-447.000.
Redenbaugh, M. Keith, to Plant Genetics, Inc. Delivery system for meristematic tissue. 4,583,320, Cl. 47-57.600.
Reed, Leland M.; Reed, William A.; and Saeman, Walter C., to PEDCo, Inc. Method and apparatus for combustion of diverse materials and heat utilization. 4,583,468, Cl. 110-246.000.
Reed, William A.: *See—*
Reed, Leland M.; Reed, William A.; and Saeman, Walter C., 4,583,468, Cl. 110-246.000.
Reed, William R., Jr.: *See—*
Komanduri, Ranga; and Reed, William R., Jr., 4,583,431, Cl. 82-1.00C.
Reesor, Lorne J., to Weston Bakeries Limited. Apparatus for tining foodstuffs. 4,583,439, Cl. 83-867.000.
Reichle + De Massari AG Elektro-Ingenieure: *See—*
Reichle, Hans, 4,583,256, Cl. 7-158.000.
Reichle, Hans, to Reichle + De Massari AG Elektro-Ingenieure. Tool for connecting a tube to a local junction box. 4,583,256, Cl. 7-158.000.
Reid, Laurance S.; and Barnhart, Ector E., to Reid, Laurance S. Separator system and process for gas conditioning solutions. 4,583,998, Cl. 55-45.000.
Reiffen, Manfred; Heider, Joachim; Austel, Volkhard; Hauel, Norbert; Kobinger, Walter; and Lillie, Christian, to Dr. Karl Thomae GmbH. Aminotetralin derivatives. 4,584,293, Cl. 514-213.000.
Reilly, Kenneth T.: *See—*
Douglas, Alan D.; and Reilly, Kenneth T., 4,584,185, Cl. 423-49.000.
Reinecke, Paul: *See—*
Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; Reinecke, Paul; and Rosslenbroich, Hans-Jurgen, 4,584,308, Cl. 514-383.000.
Holmwood, Graham; Lurssen, Klaus; Reinecke, Paul; Brandes, Wilhelm; and Hanssler, Gerd, 4,584,373, Cl. 544-225.000.
Reisser, Helmut: *See—*
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Reliance Electric Company: *See—*
Kammiller, Neil A., 4,584,595, Cl. 357-41.000.
Remley, Herbert D., to Eastman Kodak Company. Photographic color elements having hydrophilic layers containing hydrophobes in polymer particles. 4,584,255, Cl. 430-139.000.
Remo, Inc.: *See—*
Minor, Thomas H., 4,583,442, Cl. 84-413.000.
Ren, Wuyun: *See—*
Klein, Robert S.; Lim, Muill; Ren, Wuyun; and Burchenal, Joseph H., 4,584,369, Cl. 536-54.000.
Renault Vehicules Industriels: *See—*
Chassagnette, Clement; and Quemerais, Philippe, 4,583,426, Cl. 74-733.000.
Renga, James M.: *See—*
Wang, Pen-Chung; and Renga, James M., 4,584,408, Cl. 568-48.000.
Renken, Terry L.: *See—*
Vanderpool, Steven H.; and Renken, Terry L., 4,584,406, Cl. 564-479.000.
Rensselaer Polytechnic Institute: *See—*
Coward, James K., 4,584,375, Cl. 544-258.000.
Rentowl, Patricia L. Commemorative card. 4,584,213, Cl. 428-23.000.
Research Corporation: *See—*
Holland, Lawrence R., 4,584,054, Cl. 156-609.000.
Rosenberg, Barnett; and Gill, Devinder S., 4,584,316, Cl. 514-492.000.
Research Development Corporation of Japan: *See—*
Nakanouchi, Yukio; Ohnuma, Shigehiro; and Masumoto, Tsuyoshi, 4,584,078, Cl. 204-192.00R.
Reuss, Gunter: *See—*
Aicher, Albrecht; Lehmann, Gunter; Petri, Norbert; Pitteroff, Walter; Reuss, Gunter; Schreiber, Hans; and Sebastian, Robert, 4,584,412, Cl. 568-473.000.
Reuss, James L.: *See—*
Shah, Atul P.; Reuss, James L.; Guckert, Toni; and Clesius, Jeffrey J., 4,583,553, Cl. 128-704.000.
Revlon, Inc.: *See—*
Sheffler, Robert J.; Radice, Michael E.; and Jedzinak, John E., 4,583,692, Cl. 239-405.000.
Rhodes, William E., III: *See—*
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,584,319, Cl. 514-547.000.
Rhone-Poulenc Sante: *See—*
Fabre, Jean-Louis; Farge, Daniel; James, Claude; and Lave, Daniel, 4,584,297, Cl. 514-226.000.
Morioka, Satoshi; Shida, Makoto; Suzuki, Nobuyuki; and Sekihara, Kiyoshi, 4,584,134, Cl. 260-239.30P.
Rhone-Poulenc Systemes: *See—*
Ceintrey, Claude; and Crochemore, Michel, 4,584,256, Cl. 430-159.000.
Rich, Ervan E.: *See—*
Hosey, Richard E.; and Rich, Ervan E., 4,583,311, Cl. 40-611.000.
Richards, Edmond A., to Plasma-Therm, Inc. Apparatus for conveying a semiconductor wafer. 4,584,045, Cl. 156-345.000.
Richardson, John S.: *See—*
Richardson, John W.; and Richardson, John S., 4,583,318, Cl. 47-1.500.
Richardson, John W.; and Richardson, John S. Apparatus and method for direct application of treatment liquid to growing vegetation. 4,583,318, Cl. 47-1.500.
Richardson, Kenneth; and Whittle, Peter J., to Pfizer Inc. Antifungal 2-aryl-2-hydroxy perfluoro-1-(1H-1,2,4-triazol-1-yl) alkanones and alkanols. 4,584,307, Cl. 514-383.000.
Ricoh Company, Ltd.: *See—*
Harada, Masahide, 4,583,835, Cl. 355-14.0CH.
Miyazawa, Hideyuki, 4,584,607, Cl. 358-209.000.
Nakayama, Nobuhiro; Isoda, Tetsuo; Watanabe, Yoichiro; and Aoki, Mitsuo, 4,584,254, Cl. 430-108.000.
Seko, Nachio; Tani, Tatsuo; Idenawa, Hiroyuki; Yano, Takashi; and Nakamura, Isao, 4,583,834, Cl. 355-14.00C.
Ridgway, Lance D., to Hy-Reel Machinery, Inc. Vehicle mountable cable reel apparatus. 4,583,714, Cl. 254-326.000.
Riefler, Monte. Insulated concrete block assembly and method of making the same. 4,584,043, Cl. 156-297.000.
Riegert, Hermann: *See—*
Dangel, Artur; Frech, Josef; Niess, Willi; Prillipp, Rolf, deceased; Riegert, Hermann; Wittlinger, Gerhard; and Anderl, Siegfried, 4,583,449, Cl. 99-279.000.
Riley, Joseph L., to Corbett, Scott S., Jr.; and Perrott, Lynn F. Method and system for storing wheeled frames of detachable cargo container type trailers. 4,583,902, Cl. 414-261.000.
Riley, Thomas M.: *See—*
Gecht, Brent A.; and Riley, Thomas M., 4,583,730, Cl. 272-76.000.
Rinnai Kabushiki Kaisha: *See—*
Yamana, Toshifumi, 4,583,937, Cl. 431-76.000.

Riter, John J., Jr.: *See*—
Goldberg, Joshua I.; Lardiere, Benjamin G., Jr.; McCoy, Bruce E.; and Riter, John J., Jr., 4,584,707, Cl. 455-41.000.
Ritsema, Irving R., to Allied Corporation. Heat shield element for a brake. 4,583,623, Cl. 188-264.00G.
Rivera, David: *See*—
Sibigtroth, James M.; and Rivera, David, 4,584,698, Cl. 377-110.000.
Roantree, Michael L.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Nitro pyrroles. 4,584,384, Cl. 546-281.000.
Robb, Dennis M.; and Wilson, Peter K., to Broken Hill Proprietary Company Limited, The. Rail anchoring. 4,583,685, Cl. 238-54.000.
Robert Bosch GmbH: *See*—
Frank, Rudiger; Schramm, Herbert; Kopper, Werner; and Worner, Dieter, 4,583,611, Cl. 180-197.000.
Frister, Manfred, 4,584,496, Cl. 310-60.00R.
Kosak, Wolfgang, 4,584,645, Cl. 364-431.110.
Roberts, Gareth G.; and Twigg, Martyn V., to Imperial Chemical Industries PLC. Thin films of phthalocyanine on substrate. 4,584,235, Cl. 428-333.000.
Roberts, Joseph A.; and Stearns, Thomas H., to Advanced Circuit Technology, Inc. Self-aligning electrical connection assembly. 4,583,800, Cl. 339-17.00F.
Robillard, Michele: *See*—
Chive, Maurice; Constant, Eugene; Leroy, Yves; Mamouni, Ahmed; Robillard, Michele; and Van de Velde, Jean-Claude, 4,583,869, Cl. 374-122.000.
Robinson, Larry G.: *See*—
King, Edward C.; and Robinson, Larry G., 4,583,312, Cl. 40-621.000.
Roboter GmbH: *See*—
Kraus, Josef; and Jaufmann, Franz, 4,583,634, Cl. 198-341.000.
Roccaforte, Harry I., to Waldorf Corporation. Microwave popcorn package. 4,584,202, Cl. 426-111.000.
Rocha, Henry A. F.: *See*—
Harnden, John D., Jr.; Rocha, Henry A. F.; and Bloomer, Milton D., 4,584,525, Cl. 324-126.000.
Roche, John N.: *See*—
Fisher, Kenneth J.; and Roche, John N., 4,583,655, Cl. 220-346.000.
Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft m.b.H. Hinge assembly for connecting a door to a frame of a furniture body. 4,583,261, Cl. 16-238.000.
Rockett, Danny F.: *See*—
Hooke, John W.; and Rockett, Danny F., 4,584,250, Cl. 429-97.000.
Rockney, Bennett H.: *See*—
Adams, Thomas E.; Grant, Edward R.; Rockney, Bennett H.; and Morrison, Richard J. S., 4,583,710, Cl. 251-129.100.
Rockwell International Corporation: *See*—
DuBose, J. Timothy; Hale, David L.; and Marston, Robert K., 4,584,540, Cl. 332-9.00R.
Southwell, William H., 4,583,822, Cl. 350-164.000.
Wagner, William R., 4,583,362, Cl. 60-259.000.
Rockwool AB: *See*—
Eiermann, Horst W., 4,584,214, Cl. 428-35.000.
Rody, Jean: *See*—
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Roe Incorporated: *See*—
Ferguson, William B., 4,583,637, Cl. 198-787.000.
Rogers, Barry A.: *See*—
Shelangoskie, Donald R.; Brown, Jack H.; Jacobsen, Eric K.; Masterson, Patrick A.; Pierce, Ricky A.; Rogers, Barry A.; and Valentine, Lawrence J., 4,583,336, Cl. 52-250.000.
Rogers, Chester D., to Buck Rogers Mfg. Co., Inc. Biomass gasifier and charcoal producer. 4,583,992, Cl. 48-76.000.
Rogers Corporation: *See*—
Schilling, Donald P.; Jodoin, Raymond C.; and Johnston, Joseph E., 4,584,627, Cl. 361-306.000.
Rohm, Gunter H. Locking drill chuck with protection against over-tightening. 4,583,751, Cl. 279-1.00K.
Rohm and Haas Company: *See*—
Patterson, Dennis R., 4,584,014, Cl. 71-113.000.
Rolfe, John D.: *See*—
Maslin, Roger F.; and Rolfe, John D., 4,583,460, Cl. 101-375.000.
Rolscreen Company: *See*—
Minter, Mearl, 4,583,333, Cl. 52-90.000.
Roman, Stephan: *See*—
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Romine, John S.: *See*—
Mittelman, Jonathan S.; and Romine, John S., 4,583,554, Cl. 128-774.000.
Rose, Marvin D. Powered adjuster for three-point hitch upper arm. 4,583,421, Cl. 74-586.000.
Rosenberg, Barnett; and Gill, Devinder S., to Research Corporation. Palladium anti-cancer complexes. 4,584,316, Cl. 514-492.000.
Rosenberg, Peretz. Rotary sprinkler. 4,583,689, Cl. 239-381.000.
Ross, Ludwig: *See*—
Grabowski, Danuta; Ross, Ludwig; Geiler, Volkmar; Mennemann, Karl; and Gliemeroth, Georg, 4,584,279, Cl. 501-78.000.
Rosslenbroich, Hans-Jurgen: *See*—
Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; Reinecke, Paul; and Rosslenbroich, Hans-Jurgen, 4,584,308, Cl. 514-383.000.
Rost, Kurt; and Casty, Ueli, to Cafag AG. Coffee machine. 4,583,450, Cl. 99-279.000.
Rothbard, Jonathan: *See*—
Schoolnik, Gary K.; and Rothbard, Jonathan, 4,584,195, Cl. 424-92.000.
Rotondo, Italo; and Dontigney, Warren, to Rotondo, Italo. Collar tip construction. 4,583,379, Cl. 63-2.000.
Rouch, Keith E.: *See*—
Ball, James H.; Sheth, Pradip N.; and Rouch, Keith E., 4,583,912, Cl. 415-119.000.
Rougeau, Derek E.: *See*—
Hutchins, Clinton E.; Rougeau, Derek E.; Chalmers, Thomas E.; and Bemis, Richard A., 4,584,067, Cl. 204-33.000.
Rowe, John W.; and Gregor, Harry P., to United States of America, Agriculture. Membrane processes for separation of organic acids from kraft black liquors. 4,584,057, Cl. 162-16.000.
Rubendall, Douglas C.: *See*—
Kaufman, John W.; and Rubendall, Douglas C., 4,583,807, Cl. 339-125.00R.
Rubenstein, Raymond D., to J. I. Case Company. Tractor-trailer brake system. 4,583,788, Cl. 303-7.000.
Rubin, David. Anti-asthmatic composition and method using 8,11,14,17-eicosatetraenoic acid. 4,584,320, Cl. 514-560.000.
Rubin, David, to Schwimmer, Adolf W.; Schwartz, Irwin S.; and Rubin, David. β-Glucuronidase activity and/or pH-dependent pharmaceuticals and thier methods of production. 4,584,368, Cl. 536-4.100.
Rubin, Steven A., to Universal Products, Inc. Mounting spacer for electrolytic capacitor. 4,584,630, Cl. 361-433.000.
Rucknagel, Mathias: *See*—
Battig, Udo; Dittrich, Peter; Oertel, Norbert; Osterland, Guter; Rucknagel, Mathias; Scheler, Werner; and Schultz, Klaus, 4,583,847, Cl. 355-53.000.
Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., to Johnson Service Company. Controllable rotary actuator. 4,584,511, Cl. 318-600.000.
Ruetgerswerke Aktiengesellschaft: *See*—
Gardziella, Arno; Adolphs, Peter; and Kwasniok, Alois, 4,584,329, Cl. 523-145.000.
Ruhenbeck, Wolfgang: *See*—
Schlindwein, Heinz; and Ruhenbeck, Wolfgang, 4,583,401, Cl. 73-295.000.
Ruiz, Guillermo A., to Shelley Manufacturing Division of Alco Food Service Equipment Company. Forced hot air heating cabinet for self-leveling plate dispensers and the like. 4,584,467, Cl. 219-400.000.
Runion, Brett H.; Novak, Brian A.; and Horne, Gary, to Runion, Brett H. Mobile body support vehicle. 4,583,758, Cl. 280-644.000.
Rupp, Edward J.: *See*—
Zolnowsky, John; Rupp, Edward J.; and MacGregor, Douglas B., 4,584,666, Cl. 364-900.000.
Russo, Saverio: *See*—
Alfonso, Giovanni C.; Russo, Saverio; Pedemonte, Enrico; Turturro, Antonio; and Puglisi, Concetto, 4,584,149, Cl. 264-5.000.
Ruttert, Gerd: *See*—
Jung, Jurgen; and Ruttert, Gerd, 4,583,412, Cl. 74-393.000.
Ruyle, William V., to Merck & Co., Inc. Fused tricyclic lactams as angiotensin converting enzyme inhibitors and as antihypertensive agents. 4,584,294, Cl. 514-214.000.
Ryckeboer, Christian. Method and device for the asynchronous series communication on the multipoint type of a plurality of logic transceivers. 4,584,575, Cl. 340-825.500.
S.A.I.A.G. S.p.A.: *See*—
Ballocca, Guido, 4,584,150, Cl. 264-40.100.
S&C Electric Company: *See*—
Chabala, Leonard V.; and Lin, Chester H., 4,583,750, Cl. 277-168.000.
S. C. Johnson & Son, Inc.: *See*—
Crapser, James R., 4,583,688, Cl. 239-314.000.
Martens, Edward J.; and Schuebel, Gerald H., 4,583,686, Cl. 239-35.000.
Saam, John C.: *See*—
Huebner, David J.; and Saam, John C., 4,584,341, Cl. 524-837.000.
Sabol, George P.: *See*—
McDonald, Samuel G.; and Sabol, George P., 4,584,030, Cl. 148-11.50F.
Sach, George S., to Smith Kline & French Laboratories Limited. 5-(Nitro or halogen)-3-(alkyl)-2-(aminoalkyl)pyridines. 4,584,381, Cl. 546-312.000.
Sacleux, Bernard: *See*—
Bernard, Alain M.; and Sacleux, Bernard, 4,583,404, Cl. 73-517.00B.
Saegusa, Nobuo, to Nissan Motor Company, Limited. Process for fabricating foam resin panel with integral reinforcement. 4,584,230, Cl. 428-218.000.
Saeman, Walter C.: *See*—
Reed, Leland M.; Reed, William A.; and Saeman, Walter C., 4,583,468, Cl. 110-246.000.
Saffo, John J. Protection mask. 4,583,535, Cl. 128-201.250.
Saiki, Takashi: *See*—
Ando, Narumi; Oda, Kito; Saiki, Takashi; Hashimoto, Yoshiaki; Tsuyuki, Akira; and Kitazawa, Yoshio, 4,584,066, Cl. 204-28.000.
Sailas, Vaino : *See*—
Lehtinen, Antti; Sailas, Vaino ; Lampinen, Markku; and Ekberg, Bjarne, 4,584,058, Cl. 162-199.000.
Saint-Gobain Emballage: *See*—
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Saint-Gobain Vitrage: *See*—
Bourelier, Claude; Daude, Gerard; and Orain, Roger, 4,584,229, Cl. 428-216.000.

Colmon, Daniel; Letemps, Bernard; Delpeyroux, Jean-Pierre; and Fremeaux, Jacques, 4,584,236, Cl. 428-333.000.
Saint-Gobin Vitrage: *See*—
Zanella, Guy E. A., 4,584,155, Cl. 264-252.000.
Saito, Junichi: *See*—
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Moriya, Koichi, 4,584,396, Cl. 560-63.000.
Saito, Kiyoshi; and Nanba, Mitsuo, to Agency of Industrial Science and Technology; Ministry of International Trade and Industry; and Sun-Esu Co., Ltd. Method for thermal decomposition of plastic scraps and apparatus for disposal of plastic scraps. 4,584,421, Cl. 585-241.000.
Saito, Masayuki: *See*—
Oodaira, Hirosi; Suzuki, Haruko; Saito, Masayuki; and Iwase, Nobuo, 4,584,456, Cl. 219-121.0LM.
Saito, Susumu: *See*—
Iijima, Takeo; Shitara, Mototaka; Sumikawa, Seiji; and Saito, Susumu, 4,583,922, Cl. 417-269.000.
Saito, Takashi: *See*—
Kan, Fumitaka; Tajima, Hatsuo; Hosoi, Atsushi; Takenouchi, Masanori; and Saito, Takashi, 4,583,490, Cl. 118-658.000.
Saito, Toshio: *See*—
Yamashita, Kazuichi; Saito, Toshio; Zin, Keiichi; and Takemoto, Yoshiro, 4,583,909, Cl. 414-749.000.
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; and Hosoe, Kazuya, to Canon Kabushiki Kaisha. Signal accumulating time control method and apparatus for a signal accumulating type radiation sensing device. 4,584,656, Cl. 364-569.000.
Sakai, Takashi; Maeda, Kazuo; Kawabata, Masuo; and Kono, Mituo, to Mitsubishi Acetate Co., Ltd; and Japan Tobacco Inc. Tobacco smoke filter. 4,583,560, Cl. 131-336.000.
Sakai, Yoshio: *See*—
Ando, Takeki; Kurosawa, Toshiaki; Kuroha, Hiroaki; and Sakai, Yoshio, 4,584,636, Cl. 363-54.000.
Sakakibara, Yoshio: *See*—
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Sakamoto, Hiroshi: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, 4,584,171, Cl. 419-8.000.
Sakamoto, Noriaki; and Hirai, Shinji, to Kabushiki Kaisha Toshiba. Refrigerator. 4,583,378, Cl. 62-505.000.
Sakata, Jiro; and Yamamoto, Minoru, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Apparatus for separating condensable gas. 4,583,996, Cl. 55-16.000.
Sakito, Yoji: *See*—
Mukaiyama, Teruaki; Sakito, Yoji; and Asami, Masatoshi, 4,584,387, Cl. 548-324.000.
Salete-Garces, Felipe. Screen and rotor assembly for grain husking, decorticating, polishing and whitening machines. 4,583,455, Cl. 99-519.000.
Salimbeni, Aldo: *See*—
Manghisi, Elso; and Salimbeni, Aldo, 4,584,321, Cl. 514-722.000.
Salisbury, Winfield W., to Energy Profiles, Inc. Plasma wave damping system and method. 4,584,159, Cl. 376-107.000.
Salkeld, Richard W.: *See*—
Field, Thomas T.; Chen, Otis Y.; Geary, Arthur R.; Salkeld, Richard W.; and Ulion, Nicholas E., 4,583,608, Cl. 148-1.000.
Salomon, Georges P. J., to Salomon S.A. Safety binding for ski. 4,583,757, Cl. 280-628.000.
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Paris, Jean, 4,583,306, Cl. 36-119.000.
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Lopez, Michael J.; Williams, Howard A., Jr.; and Salvatori, Henry J., 4,584,569, Cl. 340-566.000.
Samsung Semiconductor and Telecommunications Co., Ltd.: *See*—
Lee, Bang W.; and Hong, Sung I., 4,584,504, Cl. 318-16.000.
Sancken, Ernest H.: *See*—
Silverthorn, Charles R.; and Sancken, Ernest H., 4,583,662, Cl. 222-43.000.
Sanders Associates, Inc.: *See*—
Burrows, James L., 4,584,664, Cl. 364-900.000.
Sanderson, Roger S. Sterile bag. 4,583,643, Cl. 206-438.000.
Sanderson, Roger S.; and Whelchel, Robert C., to Sanderson, Roger S. Sterilized storage container. 4,584,182, Cl. 422-310.000.
Sani-Therm, Inc.: *See*—
DiSabatino, Sabatino, 4,583,469, Cl. 110-346.000.
Sanjurjo, Angel: *See*—
Nanis, Leonard; and Sanjurjo, Angel, 4,584,181, Cl. 422-241.000.
Sanner, Axel: *See*—
Sterzel, Hans-Josef; Sanner, Axel; and Neumann, Peter, 4,584,359, Cl. 526-241.000.
Sano, Chiaki: *See*—
Otani, Masaru; Sano, Chiaki; and Kusumoto, Isao, 4,584,400, Cl. 562-443.000.
Sanshin Kogyo Kabushiki Kaisha: *See*—
Nakase, Ryoichi, 4,583,953, Cl. 440-52.000.
Sanson, Michel: *See*—
Estienne, Patrick; and Sanson, Michel, 4,583,585, Cl. 165-94.000.
Santen Pharmaceutical Co., Ltd.: *See*—
Iwao, Jun-ichi; Iso, Tadashi; and Oya, Masayuki, 4,584,300, Cl. 514-225.000.
Santen, Sven: *See*—
Mathisson, Goran; and Santen, Sven, 4,584,465, Cl. 219-383.000.
Santi, Roberto; Cometti, Giuseppe; and Pagani, Anselmo, to Montedison S.p.A. Process for preparing carbonyl compounds. 4,584,145, Cl. 558-406.000.
Santrade Limited: *See*—
Waldenstrom, Mats G., 4,584,020, Cl. 75-236.000.
Saris, Hendrik J. A.: *See*—
Lebling, Karl; Reisser, Helmut; and Saris, Hendrik J. A., 4,583,858, Cl. 356-402.000.
Sasaki, Masaki: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, 4,584,171, Cl. 419-8.000.
Sasaki, Nobuo: *See*—
Takaoka, Matsuo; Sasaki, Nobuo; Kawamura, Seiichiro; and Hataishi, Osamu, 4,584,025, Cl. 148-1.500.
Sasaki, Toshihiro; Nakagawa, Yasushi; Miyadera, Kazuhiko; and Hirota, Toyokazu, to Toyota Jidosha Kabushiki Kaisha. Windshield defroster. 4,583,448, Cl. 98-2.080.
Sasaki, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Cooling apparatus. 4,583,375, Cl. 62-341.000.
Sasamoto, Koichi: *See*—
Hisada, Yoji; Sasamoto, Koichi; Ichinose, Masao; Utaka, Osamu; and Nakayama, Seiya, 4,584,024, Cl. 127-66.000.
Sasazawa, Kazuo; and Yamaoka, Nobutatsu, to Taiyo Yuden Kabushiki Kaisha. Dielectric ceramic composition. 4,584,282, Cl. 501-136.000.
Sato, Hiroshi: *See*—
Yabu, Syuichi; and Sato, Hiroshi, 4,583,840, Cl. 355-30.000.
Sato, Katsujiro: *See*—
Kawasawa, Toshio; Sato, Katsujiro; and Sugiura, Akiyoshi, 4,583,961, Cl. 474-113.000.
Sato, Koei: *See*—
Matsuo, Tadashi; Iizuka, Yutaka; and Sato, Koei, 4,584,367, Cl. 534-634.000.
Sato, Mikio: *See*—
Fujii, Tsunenori; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Koto, Kaoru; Ohmori, Hideki; Yokokura, Hisao; Okabe, Yoshiaki; Hattori, Shintaroo; Kitamura, Teruo; Mukoh, Akio; and Sato, Mikio, 4,584,120, Cl. 252-299.630.
Sato, Toshihiro: *See*—
Takeuchi, Teruaki; Suzuki, Ryo; Kodama, Naoki; Takeshita, Masatoshi; Ikeda, Tadashi; Sato, Toshihiro; and Sugita, Yutaka, 4,584,668, Cl. 365-36.000.
Satzinger, Gerhard; Barth, Hubert; Hartenstein, Johannes; Herrmann, Manfred; Fritschi, Edgar; and Schutt, Ilse-Dore, to Warner-Lambert Company. 4-thioxo-benzopyrano[2,3-d]pyrimidine derivatives. 4,584,374, Cl. 544-247.000.
Sauer, Gale E., to Donn Incorporated. Fixture support clip for suspension ceiling grid systems. 4,583,340, Cl. 52-484.000.
Sawada, Yutaka: *See*—
Taga, Yasunori; and Sawada, Yutaka, 4,583,815, Cl. 350-1.600.
Schachschneider, Gert: *See*—
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Schadt, Martin: *See*—
Petrzilka, Martin; and Schadt, Martin, 4,583,826, Cl. 350-350.00R.
Schaffer, James P.: *See*—
Cocks, Franklin H.; Jones, Phillip L.; and Schaffer, James P., 4,584,501, Cl. 313-493.000.
Schales, Wolfgang: *See*—
Abendroth, Paul; Dettinger, Dietrich; Holl, Roland; and Schales, Wolfgang, 4,583,459, Cl. 101-217.000.
Scharf, Robert M.: *See*—
Beck, William R.; Jahn, William; Koltenback, Steven R.; Scharf, Robert M.; and Schwab, Ronald, 4,583,289, Cl. 29-749.000.
Schaumburg, Edward G.; Recht, Peter A.; and Frich, Mark R., to GNB Batteries Inc. Apparatus and method for processing and transferring battery cell elements. 4,583,286, Cl. 29-730.000.
Schechter, Michael M., to Ford Motor Company. Positive displacement electronic fuel injection pump. 4,583,508, Cl. 123-449.000.
Schechter, Michael M.; and Simko, Aladar O., to Ford Motor Company. Diesel fuel injection system. 4,583,509, Cl. 123-451.000.
Schechter, Michael M., to Ford Motor Company. Electromagnetic distributor-type multiplunger fuel injection pump. 4,583,510, Cl. 123-458.000.
Scheler, Werner: *See*—
Battig, Udo; Dittrich, Peter; Oertel, Norbert; Osterland, Guter; Rucknagel, Mathias; Scheler, Werner; and Schultz, Klaus, 4,583,847, Cl. 355-53.000.
Schenten, James L., to Chrysler Corporation. Rear spring actuated brake proportioner. 4,583,789, Cl. 303-22.00R.
Schering Aktiengesellschaft: *See*—
Nickish, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; Beier, Sybille; and Elger, Walter, 4,584,288, Cl. 514-172.000.
Schering Corporation: *See*—
Doll, Ronald J.; Neustadt, Bernard R.; Smith, Elizabeth M.; Magatti, Charles V.; and Gold, Elijah H., 4,584,285, Cl. 514-19.000.
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,584,133, Cl. 260-245.20R.
Scherr, Mike. Auger apparatus for discharging material from a truck box. 4,583,905, Cl. 414-505.000.

Schiel, Christian; Steiner, Karl; and Flamig, Hans, to J. M. Voith GmbH. Belt press unit, preferably as wet press of a paper machine. 4,584,059, Cl. 162-361.000.

Schilling, Donald P.; Jodoin, Raymond C.; and Johnston, Joseph E., to Rogers Corporation. Flat decoupling capacitor and method of manufacture thereof. 4,584,627, Cl. 361-306.000.

Schimko, Reinhold, to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG. Carriage removal and supporting device for flat knitting machines. 4,583,380, Cl. 66-64.000.

Schinzing, Walter W. Rack for hanging bats or other objects. 4,583,647, Cl. 211-60.100.

Schlage Lock Company: *See*—
Hull, Scott A., 4,583,382, Cl. 70-107.000.

Schlindwein, Heinz; and Ruhenbeck, Wolfgang, to BASF Aktiengesellschaft. Method and apparatus for measuring the level of liquids or agitated charges in vessels. 4,583,401, Cl. 73-295.000.

Schlumberger Technology Corp.: *See*—
Czernichow, Jean A.; and Chevassus-More, Alain R., 4,583,595, Cl. 166-264.000.

Schmid, Walter, to C. R. Bard, Inc. Bioelectric electrode-arrangement. 4,583,548, Cl. 128-639.000.

Schmidhammer, Ludwig; Dummer, Gerhard; Haselwarter, Klaus; and Strasser, Rudolf, to Wacker-Chemie GmbH. Process for upgrading hydrogen chloride containing chlorine, iron-III-chloride, ethylene and/or acetylene. 4,584,123, Cl. 252-188.310.

Schmidt, Erhard: *See*—
Dopp, Matthias; and Schmidt, Erhard, 4,584,620, Cl. 360-128.000.

Schmidt, Volker: *See*—
Janssen, Manfred; Schmidt, Volker; and Bachmann, Theodor, 4,583,773, Cl. 285-382.000.

Schmiegel, Klaus K.: *See*—
Molloy, Bryan B.; and Schmiegel, Klaus K., 4,584,404, Cl. 564-347.000.

Schmitt, Marjorie, executrix: *See*—
Butman, Thomas R., Jr.; and Schmitt, Nickolas, deceased, 4,584,497, Cl. 310-214.000.

Schmitt, Nickolas, deceased: *See*—
Butman, Thomas R., Jr.; and Schmitt, Nickolas, deceased, 4,584,497, Cl. 310-214.000.

Schmitt, Paul, to Gustav Stabernack GmbH. Floor stand. 4,583,705, Cl. 248-174.000.

Schmitz, Albert: *See*—
Chen, Teh-Yi J.; Bhattacharyya, Anjan; Stacy, William T.; Vorst, Charles J.; and Schmitz, Albert, 4,584,205, Cl. 427-93.000.

Schmitz, Heinz: *See*—
Divisek, Jiri; Schmitz, Heinz; and Wullenweber, Heinz, 4,584,065, Cl. 204-11.000.

Schnable, George L.: *See*—
Wu, Chung P.; and Schnable, George L., 4,584,026, Cl. 148-1.500.

Schneider, Herb O.: *See*—
Wong, Hee; Balakrishnan, Ramanatha V.; and Schneider, Herb O., 4,584,695, Cl. 375-81.000.

Schneider, Werner; and Sustmann, Scarlet, to Henkel Kommanditgesellschaft auf Aktien. Sanitary hygiene products having odor-preventing properties. 4,583,980, Cl. 604-359.000.

Schneller, Joseph W., to National Gypsum Company. Tapered edge board. 4,584,224, Cl. 428-60.000.

Schnittger, Jan R. Hydrodynamic bearing unit. 4,583,870, Cl. 384-114.000.

Schnyder, Eugen; and Guttinger, Heinz, to Sulzer-Escher Wyss Ltd. Controlled deflection roll. 4,583,273, Cl. 29-113.0AD.

Scholz, Donald T. Electronic audio signal processor. 4,584,700, Cl. 381-61.000.

Scholz, Gunter: *See*—
Manusch, Christoph; and Scholz, Gunter, 4,583,875, Cl. 401-133.000.

Schoolnik, Gary K.; and Rothbard, Jonathan, to Leland Stanford Junior University, The Board of Trustees of the. Broad spectrum vaccine against gonorrhea. 4,584,195, Cl. 424-92.000.

Schott Glaswerke: *See*—
Grabowski, Danuta; Ross, Ludwig; Geiler, Volkmar; Mennemann, Karl; and Gliemeroth, Georg, 4,584,279, Cl. 501-78.000.

Schramm, Herbert: *See*—
Frank, Rudiger; Schramm, Herbert; Kopper, Werner; and Worner, Dieter, 4,583,611, Cl. 180-197.000.

Schreck, Hans W. Supply and dispenser device for fishing lines and like threads. 4,583,315, Cl. 43-54.100.

Schreiber, Daniel: *See*—
Raketti, Raymond; Schreiber, Daniel; Orgovan, Andrew J.; Adair, George E.; and Burrage, Lawrence M., 4,584,429, Cl. 174-18.000.

Schreiber, Hans: *See*—
Aicher, Albrecht; Lehmann, Gunter; Petri, Norbert; Pitteroff, Walter; Reuss, Gunter; Schreiber, Hans; and Sebastian, Robert, 4,584,412, Cl. 568-473.000.

Schreiber, William L.: *See*—
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Schroder, Gunther: *See*—
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Schroder, Werner-Georg: *See*—
Nagel, Dieter; Gotz, Bernhard; Causin, Elmar; and Schroder, Werner-Georg, 4,583,761, Cl. 280-781.000.

Schroeder, James E. Light pen marksmanship trainer. 4,583,950, Cl. 434-22.000.

Schruben, Jeffrey J.: *See*—
Vollmer, Patricia J.; Schruben, Jeffrey J.; Montgomery, John P.; and Yang, Huei-Hsuing, 4,584,269, Cl. 435-108.000.

Schubert, Dieter: *See*—
Spiegel, Horst; Schubert, Dieter; and Woelk, Manfred, 4,583,633, Cl. 198-459.000.

Schuebel, Gerald H.: *See*—
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Schuler, Wolfgang: *See*—
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Schultz, Klaus: *See*—
Battig, Udo; Dittrich, Peter; Oertel, Norbert; Osterland, Guter; Rucknagel, Mathias; Scheler, Werner; and Schultz, Klaus, 4,583,847, Cl. 355-53.000.

Schulz, Gunter: *See*—
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Schutt, Ilse-Dore: *See*—
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Schutz, Joseph D.; and Kung, Roger L., to Intel Corporation. CMOS dynamic random-access memory with active cycle one half power supply potential bit line precharge. 4,584,672, Cl. 365-203.000.

Schwab, Ronald: *See*—
Beck, William R.; Jahn, William; Koltenback, Steven R.; Scharf, Robert M.; and Schwab, Ronald, 4,583,289, Cl. 29-749.000.

Schwade, Hans: *See*—
Albers, Karl; and Schwade, Hans, 4,583,496, Cl. 122-379.000.

Schwartz, Irwin S.: *See*—
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Schweissindustrie Oerlikon Buhrle AG: *See*—
Werner, Alexander; and Pfenninger, Heinz, 4,584,169, Cl. 419-3.000.

Schweitzer, Francis J., Jr.: *See*—
Fedick, John; and Schweitzer, Francis J., Jr., 4,583,639, Cl. 206-325.000.

Schwimmer, Adolf W.: *See*—
Rubin, David, 4,584,368, Cl. 536-4.100.

Schwing, Ewald; Sommer, Peter; and Uhrner, Horst. Apparatus for the removal of lacquer from metallic and ceramic articles. 4,583,942, Cl. 432-58.000.

Schwob, Walter, to Motorola, Inc. Self-oscillating DC-DC switching voltage regulator. 4,584,517, Cl. 323-222.000.

Scientific Atlanta, Inc.: *See*—
Mobley, Joseph G., II, 4,584,599, Cl. 358-36.000.

Scott, Daniel G., to American Standard Inc. Empty/load brake control system. 4,583,790, Cl. 303-23.00R.

Seal Spout Corporation: *See*—
Plaessmann, Frederick A., 4,583,899, Cl. 413-53.000.

Sebag, Henri: *See*—
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Sebastian, Robert: *See*—
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Seeliger, Klaus. Transmission unit. 4,583,754, Cl. 280-246.000.

Seevinck, Evert, to U.S. Philips Corporation. Stabilized current-source circuit. 4,584,535, Cl. 330-257.000.

Segers, Jacobus C.: *See*—
Paulitz, Bernhard G. A.; Segers, Jacobus C.; and Spits, Albert J., 4,584,141, Cl. 260-420.000.

Seiler, Claus: *See*—
Hansel, Edward; Huber, Hans; Geier, Gerhard; and Seiler, Claus, 4,584,394, Cl. 556-442.000.

Seiler, Donald I. Support device. 4,583,310, Cl. 40-592.000.

Sekihara, Kiyoshi: *See*—
Morioka, Satoshi; Shida, Makoto; Suzuki, Nobuyuki; and Sekihara, Kiyoshi, 4,584,134, Cl. 260-239.30P.

Sekioka, Kunikazu: *See*—
Hirosaki, Yukihiro; Nishida, Manabu; and Sekioka, Kunikazu, 4,583,345, Cl. 53-77.000.

Seko, Nachio; Tani, Tatsuo; Idenawa, Hiroyuki; Yano, Takashi; and Nakamura, Isao, to Ricoh Company, Ltd. Copying apparatus. 4,583,834, Cl. 355-14.00C.

Sempert, Hartmut: *See*—
Vogg, Gunter; Sempert, Hartmut; and Eilenstein, Wilfried, 4,583,896, Cl. 410-69.000.

Senghaas, Karl A.; and Senghaas, Peter, to Yokel, Harry. Electronic metronome and rhythm generator. 4,583,443, Cl. 84-484.000.

Senghaas, Karl A.; and Senghaas, Peter, to Southwest Bailer Pump Company. Electrical control system for oil well bailer pump. 4,583,916, Cl. 417-36.000.

Senghaas, Peter: *See*—
Senghaas, Karl A.; and Senghaas, Peter, 4,583,443, Cl. 84-484.000.
Senghaas, Karl A.; and Senghaas, Peter, 4,583,916, Cl. 417-36.000.

Senor, Ronald E.: *See*—
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Serester, Alexander: *See*—
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Serzhantu, Ivan P.: *See*—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Ertli, Alisa A.;

Marina, Semen I.; Avxentiev, Anatoly G.; Lepetchenko, Stanislav N.; and Serzhantu, Ivan P., 4,583,977, Cl. 604-174.000.
Sewell, James D.; and Gordon, Norman E. Door panel construction. 4,583,338, Cl. 52-456.000.
SFE Technologies: *See*—
Cichanowski, Stanley W., 4,584,628, Cl. 361-309.000.
Shaanan, Gad J.: *See*—
Reddy, Redreddy S.; Filoni, Toussaint; Fletcher, Kenneth S.; Shaanan, Gad J.; and Walsh, Anthony J., 4,583,466, Cl. 105-447.000.
Shacklett, James H., Jr. Information folder construction. 4,583,763, Cl. 281-5.000.
Shah, Atul P.; Reuss, James L.; Guckert, Toni; and Clesius, Jeffrey J., to Medicomp, Inc. Ambulatory ECG analyzer and recorder. 4,583,553, Cl. 128-704.000.
Shah, Nayan S. Pressure regulating and monitoring device. 4,583,917, Cl. 417-63.000.
Shah, Siddharth R.; Singh, Shanker; and Singh, Vijendra P., to International Business Machines Corporation. Reconfigurable memory using both address permutation and spare memory elements. 4,584,682, Cl. 371-10.000.
Shanel, Kathleen A. Holder for rubber dental dam. 4,583,946, Cl. 433-136.000.
Shapiro, Mark A., to Factory Mutual Research Corporation. System for detecting tubing rupture in feedwater heaters of steam power plant. 4,583,369, Cl. 60-657.000.
Sharif, Mohammad; and Turner, Keith, to Davy McKee Ltd. Process for the production of butane-1,4-diol. 4,584,419, Cl. 568-864.000.
Sharp Kabushiki Kaisha: *See*—
Hashimoto, Shintaro; Yoshida, Kunio; Morimoto, Masafumi; Morinaga, Hisao; and Yanagiuchi, Shigenobu, 4,584,667, Cl. 364-900.000.
Ito, Matsutaka, 4,584,573, Cl. 340-734.000.
Tanabe, Takeshi, 4,584,448, Cl. 219-10.55B.
Taniguchi, Akihiko; and Anzai, Shunju, 4,583,836, Cl. 355-14.0CH.
Sharp, Patrick O., to Intel Corporation. Temperature and process stable MOS input buffer. 4,584,492, Cl. 307-475.000.
Sharpee, Richard L.: *See*—
Bass, Edmund P.; and Sharpee, Richard L., 4,584,194, Cl. 424-89.000.
Shaver, Richard L. Underwater weed cutter. 4,583,353, Cl. 56-8.000.
Shaw, David N., to Dunham-Bush, Inc. Constant evaporator pressure slide valve modulator for screw compressor refrigeration system. 4,583,373, Cl. 62-196.300.
Shaw, Gerald: *See*—
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Shea, Paul Y., to Hughes Aircraft Co. Fine line flexible cable fabrication process. 4,584,039, Cl. 156-150.000.
Sheffler, Robert J.; Radice, Michael E.; and Jedzinak, John E., to Revlon, Inc. Self-cleaning actuator button for dispensing liquids with particulate solids from a pressurized container or by piston pump. 4,583,692, Cl. 239-405.000.
Shelangoskie, Donald R.; Brown, Jack H.; Jacobsen, Eric K.; Masterson, Patrick A.; Pierce, Ricky A.; Rogers, Barry A.; and Valentine, Lawrence J., to Austin Company, The. Joint of preformed concrete elements. 4,583,336, Cl. 52-250.000.
Shell Oil Company: *See*—
Brown, Thomas L., 4,584,304, Cl. 514-351.000.
Johnson, Thomas H., 4,584,411, Cl. 568-451.000.
Shelley Manufacturing Division of Alco Food Service Equipment Company: *See*—
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Shelton, Robert E. Vacuum desalinization device. 4,584,061, Cl. 202-185.600.
Shemet, Alexander M.: *See*—
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Sheppard, Clyde H.: *See*—
Lubowitz, Hyman R.; and Sheppard, Clyde H., 4,584,364, Cl. 528-128.000.
Sheth, Pradip N.: *See*—
Ball, James H.; Sheth, Pradip N.; and Rouch, Keith E., 4,583,912, Cl. 415-119.000.
Shibata, Takemasa: *See*—
Murakami, Yoshio; Obara, Kenjiroh; Abe, Tetsuya; Shimomura, Yasuo; and Shibata, Takemasa, 4,583,394, Cl. 73-40.700.
Shida, Keizo: *See*—
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Shida, Makoto: *See*—
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Shields, David A.; and Davis, James R. Welding cable reel system. 4,584,442, Cl. 191-12.20R.
Shiga, Koji, to Fuji Photo Film Co., Ltd. Copy board stand for a reproducing camera. 4,583,837, Cl. 355-75.000.
Shigekawa, Kazuo, to Kabushiki Kaisha Kobe Seiko Sho. Screw rotor mechanism. 4,583,927, Cl. 418-150.000.
Shikano, Yoshiro: *See*—
Higashino, Shigenori; Shikano, Yoshiro; and Katsuki, Kanji, 4,584,518, Cl. 323-224.000.
Shimada, Fumitake: *See*—
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Shimamune, Takayuki: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,584,084, Cl. 204-290.00F.
Shimizu, Atsushi: *See*—
Morioka, Mikio; and Shimizu, Atsushi, 4,584,174, Cl. 420-555.000.
Shimizu, Masao, to Takeda Riken Co., Ltd. Logic circuit test system. 4,584,683, Cl. 371-25.000.
Shimomura, Yasuo: *See*—
Murakami, Yoshio; Obara, Kenjiroh; Abe, Tetsuya; Shimomura, Yasuo; and Shibata, Takemasa, 4,583,394, Cl. 73-40.700.
Shimono, Mamoru; Hashimoto, Shinichi; and Nishimura, Fuminobu, to Kabushiki Kaisha Toshiba. Developing apparatus. 4,583,842, Cl. 355-3.0DD.
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Shin-Etsu Chemical Co., Ltd.: *See*—
Kondow, Kiyohiro, 4,584,342, Cl. 524-860.000.
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Iwasaki, Masayuki; Maeda, Minoru; and Shinozaki, Fumiaki, 4,584,260, Cl. 430-288.000.
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Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Moriya, Koichi, 4,584,396, Cl. 560-63.000.
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Ertli, Alisa A.; Marina, Semen I.; Avxentiev, Anatoly G.; Lepetchenko, Stanislav N.; and Serzhantu, Ivan P., to Vsesojuzny Nauchno-Issledovatelsky Institut Meditsiuskikh Polimerov. Device for lengthy fixation of a tube introduced into the patient's body. 4,583,977, Cl. 604-174.000.
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Shung, Wu-Shi: *See*—
Ottobre, Louis G.; Szabo , Andras I.; and Shung, Wu-Shi, 4,584,658, Cl. 364-721.000.
Shuskus, Alexander J.: *See*—
Cowher, Melvyn E.; and Shuskus, Alexander J., 4,583,492, Cl. 118-723.000.
Shyu, Wen-Bin: *See*—
Lee, Chi-long; and Shyu, Wen-Bin, 4,584,337, Cl. 524-500.000.
SI Handling Systems, Inc.: *See*—
Hale, Robert A., 4,583,462, Cl. 104-48.000.
Sibigtroth, James M.; and Rivera, David, to Motorola, Inc. Sharable prescaled timer and method for a data processor. 4,584,698, Cl. 377-110.000.
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Freise, Werner; and Fischer, Herbert, 4,584,513, Cl. 318-701.000.
Kindler, Wilfried, 4,584,591, Cl. 346-140.00R.
Michael, Ewald, 4,584,670, Cl. 365-149.000.
Tihanyi, Jeno , 4,584,593, Cl. 357-23.400.
Sigety, Stephen, Jr., to General Motors Corporation. Support device for a vehicle headlamp. 4,584,634, Cl. 362-275.000.
Signetics Corporation: *See*—
Chen, Teh-Yi J.; Bhattacharyya, Anjan; Stacy, William T.; Vorst, Charles J.; and Schmitz, Albert, 4,584,205, Cl. 427-93.000.
Lee, Donald T. Y., 4,584,493, Cl. 307-530.000.
West, Jeffrey A., 4,584,490, Cl. 307-456.000.
Sih, Charles J., to Wisconsin Alumni Research Foundation. Process for preparing optically-active 4-amino-3-hydroxybutyric acid. 4,584,270, Cl. 435-128.000.
Silverman, Stanley; and Ficon, Joseph, to Sun Chemical Corporation. Radiation curing apparatus for cylindrical articles. 4,584,480, Cl. 250-453.100.
Silverthorn, Charles R.; and Sancken, Ernest H., to A. O. Smith Harvestore Products, Inc. Metering mechanism for a roller mill. 4,583,662, Cl. 222-43.000.
Simko, Aladar O.: *See*—
Schechter, Michael M.; and Simko, Aladar O., 4,583,509, Cl. 123-451.000.
Simmons Fastener Corporation: *See*—
Pufpaff, Frederick J.; and Maloney, John M., 4,583,654, Cl. 220-307.000.
Simmons, Levy M. Testing device. 4,583,405, Cl. 73-584.000.
Simon, Jean-Claude: *See*—
Demeure, Loic; Le Rouzic, Jean; and Simon, Jean-Claude, 4,584,688, Cl. 372-36.000.
Simons, Barbara B.: *See*—
Halpern, Joseph Y.; Simons, Barbara B.; and Strong, Hovey R., 4,584,643, Cl. 364-200.000.
Singer, Arnold J.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,584,319, Cl. 514-547.000.
Singer Company, The: *See*—
Weisz, William, 4,583,419, Cl. 74-552.000.
Singer, Robert: *See*—
Kunzli, Roland; Schroder, Gunther; and Singer, Robert, 4,583,720, Cl. 266-81.000.

Singh, Rajendra K., to Monsanto Company. 1-phenylthio-1-cyclopropanecarbonitrile and substituted phenylthio derivatives thereof as crop protectants. 4,584,012, Cl. 71-93.000.

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Shah, Siddharth R.; Singh, Shanker; and Singh, Vijendra P., 4,584,682, Cl. 371-10.000.

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Singh, Shanker; and Singh, Vijendra P., 4,584,681, Cl. 371-10.000.

Sirkis, Michael L., to Fidelipac Corporation. Apparatus for detecting a tape splice. 4,583,669, Cl. 226-35.000.

Sizer, Phillip S.: *See—*
Gazda, Imre I.; and Sizer, Phillip S., 4,583,592, Cl. 166-250.000.

Sjodahl, Jorgen: *See—*
Eriksson, Rolf B.; Jansson, Bertil; and Sjodahl, Jorgen, 4,583,573, Cl. 141-250.000.

Sjogren, C. Norman, to Belwith International, Ltd. Rotary door and window lock. 4,583,381, Cl. 70-95.000.

Skahen, Don H.: *See—*
Moody, Harry A.; Skahen, Don H.; and Dunn, John C., 4,583,434, Cl. 82-36.00R.

Skega AB: *See—*
Lundmark, Lorentz, 4,583,575, Cl. 144-208.00B.

Skf Steel Engineering AB: *See—*
Mathisson, Goran; and Santen, Sven, 4,584,465, Cl. 219-383.000.

Sleighter, George E., to PPG Industries, Inc. Chemical vapor deposition of a reflective film on the bottom surface of a float glass ribbon. 4,584,206, Cl. 427-109.000.

Sletzinger, Meyer; Verhoeven, Thomas R.; and Volante, Ralph P., to Merck & Co., Inc. Processes for preparing 6(R)-[2-[8(S)(2,2-dimethylbutyryloxy)-2(S),6(S)-dimethyl-1,2,3,4,4a(S),5,6,7,8,8a(S)-decahydronaphthyl-1(S)]ethyl]-4(R)-hydroxy-3,4,5,6-tetrahydro-2H-pyran-2-one. 4,584,389, Cl. 549-292.000.

Slinn, Barry. Block and board puzzle game. 4,583,742, Cl. 273-260.000.

Sloan-Kettering Institute for Cancer Research: *See—*
Klein, Robert S.; Lim, Muill; Ren, Wuyun; and Burchenal, Joseph H., 4,584,369, Cl. 536-54.000.

Smit, Johannes W. M.; and Spoorenberg, Gerard J. A., to Castelijn & Beerens Lederwaren B.V. Magnetic article theft alarm. 4,584,571, Cl. 340-572.000.

Smit, Theodorus F.: *See—*
Hazendonk, Teunis J.; Klinkhamer, Arend J.; Beck, Gerard A.; and Smit, Theodorus F., 4,584,697, Cl. 377-60.000.

Smit Transformatoren B.V.: *See—*
Versteegen, Petrus B., 4,584,550, Cl. 336-10.000.

Smith, David W., to National Distillers and Chemical Corporation. Process for the production of acetic acid from synthesis gas. 4,584,322, Cl. 518-700.000.

Smith, Elizabeth M.: *See—*
Doll, Ronald J.; Neustadt, Bernard R.; Smith, Elizabeth M.; Magatti, Charles V.; and Gold, Elijah H., 4,584,285, Cl. 514-19.000.

Smith, Faye M. Signal indicator. 4,583,482, Cl. 116-209.000.

Smith, Gary L., to Freeman Chemical Corporation. Spray gun and solvent cleaning of same. 4,583,691, Cl. 239-112.000.

Smith, Gaylord D.; Brown, Douglas S.; Bernstein, Philip; and Weller, John E., to Inco Alloys International, Inc. Platinum and palladium complexes. 4,584,392, Cl. 556-137.000.

Smith, James V., Jr., to AT&T Technologies, Inc. Apparatus for coating a lightguide fiber. 4,583,485, Cl. 118-68.000.

Smith, James W. Method and apparatus for acid mist reduction. 4,584,082, Cl. 204-278.000.

Smith, Kenneth R: *See—*
McDaniel, James E.; and Smith, Kenneth R, 4,584,560, Cl. 340-347.0AD.

Smith Kline & French Laboratories Limited: *See—*
Roantree, Michael L.; and Young, Rodney C., 4,584,384, Cl. 546-281.000.
Sach, George S., 4,584,381, Cl. 546-312.000.

Smith, Michael D.: *See—*
Duehren, David W.; and Smith, Michael D., 4,584,532, Cl. 328-151.000.

Smith, Richard W., to Wagner Systems Corporation. Helical dryer belt with profiled permeability. 4,583,302, Cl. 34-116.000.

Smith, Richard W.: *See—*
Woelfel, James A.; and Smith, Richard W., 4,583,933, Cl. 425-330.000.

Smith, Ronald E.: *See—*
Tainter, Leland B., Jr.; Goeppinger, Edward J.; King, William H.; and Smith, Ronald E., 4,583,806, Cl. 339-75.0MP.

Smith, Somers H., III, to Black & Decker Inc. Impact tool. 4,583,600, Cl. 173-124.000.

Smith, Stuart B., to Thermocell Development, Ltd. Modified aliphatic polyurethane polymers and method of preparing and using same. 4,584,325, Cl. 521-99.000.

Smith, Wanda L. Liquid level gauge and sampling device. 4,583,293, Cl. 33-126.40R.

Smithrick, John J., to United States of America, National Aeronautics and Space Administration. Oxygen recombination in individual pressure vessel nickel-hydrogen batteries. 4,584,249, Cl. 429-57.000.

Smiths Industries Public Limited Company: *See—*
Myers, Ronald V.; and Thrift, Peter R., 4,583,402, Cl. 73-304.00C.

Snow Brand Milk Products Co., Ltd.: *See—*
Taneda, Kozo; Chiba, Masae; Naka, Junichi; and Watanabe, Shunichi, 4,583,884, Cl. 406-73.000.

Snyder, Franklin B.: *See—*
Chan, Luen C.; and Snyder, Franklin B., 4,584,646, Cl. 364-449.000.

Snyder, Thomas S.: *See—*
Lahoda, Edward J.; Burgman, Herbert A.; and Snyder, Thomas S., 4,584,073, Cl. 204-157.200.

SO.M.A. Europe Transmissions Societe Nouvelle Mecanique et Automobile: *See—*
Garnier, Michel, 4,583,428, Cl. 74-785.000.

Sobey, Philip W.: *See—*
Parks, Harville M.; Sobey, Philip W.; and Wilson, Bilson J., Jr., 4,583,873, Cl. 400-629.000.

SOCIETA ITALIANA VETRO SIV S.p.A.: *See—*
Colombotto, Amedeo; Della Sala, Ernesto; and Biasutti, Luciano, 4,584,476, Cl. 250-338.000.

Societe a Responsabilite Limitee Datome: *See—*
Meuret, Paul V., 4,583,932, Cl. 425-182.000.

Societe Choquenet S.A.: *See—*
Choquenet, Pierre; and Carle, Jean C., 4,584,100, Cl. 210-225.000.

Societe d'Etudes de Machines Thermiques S.E.M.T., S.A.: *See—*
Magnet, Jean-Louis, 4,583,498, Cl. 123-41.00R.

Solan, Eamon: *See—*
Dotson, A. Steve, 4,584,570, Cl. 340-568.000.

Soled, Stuart L.; and Fiato, Rocco A., to Exxon Research and Engineering Co. Fischer-Tropsch hydrocarbon synthesis with copper promoted iron/cobalt spinel catalyst. 4,584,323, Cl. 518-700.000.

Sommer, Peter: *See—*
Schwing, Ewald; Sommer, Peter; and Uhrner, Horst, 4,583,942, Cl. 432-58.000.

Soneda, Mitsuo; Maekawa, Toshikazu; and Ohtsu, Takaji, to Sony Corporation. Solid state image pickup device. 4,584,608, Cl. 358-212.000.

Sony Corporation: *See—*
Amari, Shinji; and Nakagawa, Tomihiro, 4,584,613, Cl. 358-310.000.
Kayanuma, Akio; Nakamura, Minoru; and Asano, Katsuaki, 4,584,055, Cl. 156-628.000.
Kutaragi, Ken, 4,584,598, Cl. 358-29.000.
Soneda, Mitsuo; Maekawa, Toshikazu; and Ohtsu, Takaji, 4,584,608, Cl. 358-212.000.
Suzuki, Masakuni; Maeyama, Sadao; Arai, Kiyoshi; Kaneko, Yoshio; and Fujito, Shohgo, 4,584,601, Cl. 358-80.000.

Soo, Choi Y., to Foundation Korea Campus Crusade for Christ. Roll-type learning aid apparatus for reading and memorizing. 4,583,951, Cl. 434-178.000.

Southco, Inc.: *See—*
Bisbing, Robert H., 4,583,775, Cl. 292-64.000.

Southern, John H.: *See—*
Chamberlin, John M.; Chilvers, Edward W., Jr.; Nunning, Walter J.; and Southern, John H., 4,583,357, Cl. 57-243.000.

Southwell, William H., to Rockwell International Corporation. Quintic refractive index profile antireflection coatings. 4,583,822, Cl. 350-164.000.

Southwest Bailer Pump Company: *See—*
Senghaas, Karl A.; and Senghaas, Peter, 4,583,916, Cl. 417-36.000.

Southwire Company: *See—*
Chia, E. Henry; and Adams, Ronald D., 4,584,029, Cl. 148-2.000.

Sovak, Milos; and Ranganathan, Ramachandran, to Biophysica Foundation. Methods and compositions involving polyhydroxylated polyiodo non-ionic contrast media. 4,584,401, Cl. 564-153.000.

Spalding, Murray. Ballet slipper. 4,583,304, Cl. 36-113.000.

Spanjer, Keith G.: *See—*
Dubois, Jerry M.; and Spanjer, Keith G., 4,583,283, Cl. 29-589.000.

Speck-Kolbenpumpen-Fabrik Otto Speck KG: *See—*
Wolff, Horst; and Hani, Franz, 4,583,921, Cl. 417-269.000.

Spector, Dov; and Spector, Yehiel. Fire and explosion detection and suppression system. 4,583,597, Cl. 169-61.000.

Spector, Yehiel: *See—*
Spector, Dov; and Spector, Yehiel, 4,583,597, Cl. 169-61.000.

Spencer, Barry A.: *See—*
Crivello, James P.; and Spencer, Barry A., 4,583,731, Cl. 272-144.000.

Spencer, Herbert W., III: *See—*
Stern, Jay L.; Spencer, Herbert W., III; and Lebel, Alon, 4,584,271, Cl. 435-167.000.

Spiegel, Horst; Schubert, Dieter; and Woelk, Manfred, to VEB Kombinat Nagema. Conveyor for packing machines. 4,583,633, Cl. 198-459.000.

Spies, Klaus: *See—*
Erlenmaier, Gunter; and Spies, Klaus, 4,583,792, Cl. 305-42.000.

Spiesman, Robert L.: *See—*
Kirk, David L.; and Spiesman, Robert L., 4,583,865, Cl. 368-46.000.

Spindler, Robert G.: *See—*
Kenworthy, James S.; Motyka, Victor; and Spindler, Robert G., 4,584,216, Cl. 428-38.000.

Spinner, Georg. Radio frequency coaxial switch. 4,584,446, Cl. 200-153.00S.

Spits, Albert J.: *See*—
Paulitz, Bernhard G. A.; Segers, Jacobus C.; and Spits, Albert J., 4,584,141, Cl. 260-420.000.

Spoorenberg, Gerard J. A.: *See*—
Smit, Johannes W. M.; and Spoorenberg, Gerard J. A., 4,584,571, Cl. 340-572.000.

Sportforderung Peter Kung AG: *See*—
Kung, Peter, 4,584,221, Cl. 428-44.000.

Sprague Electric Company: *See*—
Hutchins, Clinton E.; Rougeau, Derek E.; Chalmers, Thomas E.; and Bemis, Richard A., 4,584,067, Cl. 204-33.000.

Spreter, Victor C.: *See*—
Zellweger, Conrad; and Spreter, Victor C., 4,583,940, Cl. 431-269.000.

Spridco, Dale R., to Falk Corporation, The. Centrifugally actuated wet plate clutch. 4,583,626, Cl. 192-70.250.

SRI International: *See*—
Nanis, Leonard; and Sanjurjo, Angel, 4,584,181, Cl. 422-241.000.

SS Pharmaceutical Co., Ltd.: *See*—
Yokoi, Koichi; Hasegawa, Hiroshi; Narita, Tadashi; Asaoka, Takemitsu; Kukita, Kenichi; Ishizeki, Seiji; and Nakashima, Toshiaki, 4,584,377, Cl. 546-15.000.

Staab, Rudolf; and Hannesen, Kurt, to Hoechst Aktiengesellschaft. Bipolar electrolysis apparatus with gas diffusion cathode. 4,584,080, Cl. 204-255.000.

Stackhouse, Kenneth B.: *See*—
Wilson, Patricia A.; Stackhouse, Kenneth B.; Chakraborty, Sujit; Ching, Walter S.; Hill, William D.; Knepp, John B.; Ward, James P.; and Zediker, Warren L., 4,584,165, Cl. 376-216.000.

Stacy, William T.: *See*—
Chen, Teh-Yi J.; Bhattacharyya, Anjan; Stacy, William T.; Vorst, Charles J.; and Schmitz, Albert, 4,584,205, Cl. 427-93.000.

Staeger, Hans, to Octanorm-Vertriebs-Gesellschaft mit beschrankter Haftung fur Bauelemente. Profile tubes for the production of readily assembled and dismantled structures. 4,583,359, Cl. 52-721.000.

Stafford, David H., to Dynamics Research Corporation. Adjustable gage stop. 4,583,391, Cl. 72-461.000.

Standard Oil Company, The: *See*—
McGarry, Phillip E.; and Herman, David E., 4,583,990, Cl. 44-51.000.

Standard Oil Company (Indiana): *See*—
Klotz, Marvin R., 4,584,415, Cl. 568-697.000.
McCollum, John D.; and Wolff, William F., 4,584,088, Cl. 208-11.0LE.
Peck, Lawrence B., 4,584,087, Cl. 208-11.0LE.
Umuth, Eugene E.; and Gutberlet, Louis C., 4,584,089, Cl. 208-65.000.

Standard Telephones and Cables Public Limited Company: *See*—
Monk, Trevor K., 4,584,671, Cl. 365-154.000.

Stanhope, Lawrence E. Space garden. 4,583,321, Cl. 47-58.000.

Stankey, John E., to General Dynamics Pomona Division. Frequency-agile, multi-channel, microwave frequency synthesizer. 4,584,539, Cl. 331-16.000.

Stanley Electric Company, Ltd.: *See*—
Teshima, Toru; Ariga, Kazuo; and Yoshida, Mitsunari, 4,584,461, Cl. 219-209.000.

Stanley Works, The: *See*—
Hutchins, Walter J.; and Drechsler, Mark A., 4,583,294, Cl. 33-138.000.

Stark, Louis E.: *See*—
Bibb, Henry Q.; Merker, David E.; and Stark, Louis E., 4,583,672, Cl. 228-2.500.

Staudigl, Rudolf, to Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe mbH. Process for reducing the hydroxyl content of optical waveguides. 4,583,997, Cl. 55-31.000.

Ste Francaise des Produits pour Catalyse Pro-Catalyse chez Institut Francais du Petrole: *See*—
Toulhoat, Herve ; Plumail, Jean-Claude; Mercier, Marc; and Jacquin, Yves, 4,584,093, Cl. 208-216.00R.

Stearns, Thomas H.: *See*—
Roberts, Joseph A.; and Stearns, Thomas H., 4,583,800, Cl. 339-17.00F.

Steele, James E., to Bethlehem Steel Corporation. Mobile, offshore, jack-up, marine platform adjustable for sloping sea floor. 4,583,881, Cl. 405-198.000.

Steffen, Fritz. Working folder. 4,583,764, Cl. 281-31.000.

Steffen, Robert P.; Evans, Dale B.; Kaplan, Harvey R.; and Weisbach, Jerry A., to Warner-Lambert Company. Method of treating heart failure and medicaments therefor. 4,584,299, Cl. 514-252.000.

Stegmaier, Joann: *See*—
Einhorn, Carol J.; and Stegmaier, Joann, 4,583,983, Cl. 604-329.000.

Stehning, Werner, to Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft. Swirl nozzles, especially for scrubbing towers for flue gases. 4,584,147, Cl. 261-115.000.

Stein Industrie: *See*—
Franzolini, Marc; Maria, Edmond; Vanderschaeghe, Alain; and Bezier, Jean, 4,583,588, Cl. 165-173.000.

Steinberger, Helmut: *See*—
Paul, Winfried; Nouvertne, Werner; Neuray, Dieter; Steinberger, Helmut; and Grape, Wolfgang, 4,584,360, Cl. 528-14.000.

Steinberner, Udo: *See*—
Dieckelmann, Gerhard; Eckwert, Klemens; Jeromin, Lutz; Peukert, Eberhard; and Steinberner, Udo, 4,584,390, Cl. 549-526.000.

Steiner, Karl: *See*—
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Steinkuhl, Bernd: *See*—
Breuer, Oswald; Merten, Gerhard; Steinkuhl, Bernd; and Rassmann, Christoph, 4,583,785, Cl. 299-34.000.

Steinmeyer, Donald A.: *See*—
Dietrich, John J.; Steinmeyer, Donald A.; and Hartmann, Dirck T., 4,583,520, Cl. 126-424.000.

Stenuick Freres: *See*—
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Stephen, John F.: *See*—
Hartmann, Ludwig A.; and Stephen, John F., 4,584,380, Cl. 546-250.000.

Stephens, Barry D.; Morehead, Peter B.; and Welch, James B., to Energy Absorption Systems, Inc. Universal anchor assembly for impact attenuation device. 4,583,716, Cl. 256-13.100.

Stepp, Lee W.: *See*—
Zunkel, Gary D.; and Stepp, Lee W., 4,583,593, Cl. 166-382.000.

Sterling, Henley F.; Bush, Eric L.; and Alexander, John H., to International Standard Electric Corporation. Capacitors. 4,584,074, Cl. 204-181.100.

Stern, Jay L.; Spencer, Herbert W., III; and Lebel, Alon, to Joy Manufacturing Company. Bacterial regeneration apparatus and process. 4,584,271, Cl. 435-167.000.

Sterzel, Hans-Josef; Sanner, Axel; and Neumann, Peter, to BASF Aktiengesellschaft. Vinyl polymer membranes. 4,584,359, Cl. 526-241.000.

Stewart, Elliott B. Method of testing hair strands using kit. 4,583,562, Cl. 132-9.000.

Stiebel Eltron GmbH & Co. KG: *See*—
Klages, Horst; Bonatz, Hartmut; Appun, Ernst; Wahnschaffe, Klaus-Dieter; Friedrich, Baldur; and Jakal, Karl H., 4,584,463, Cl. 219-306.000.

Stikvoort, Eduard F., to U.S. Philips Corporation. Decimation filter arrangement. 4,584,659, Cl. 364-724.000.

Storandt, Ralf: *See*—
Storz, Regina; Feucht, Fritz; and Storandt, Ralf, 4,583,324, Cl. 49-367.000.

Storz, Regina; Feucht, Fritz; and Storandt, Ralf, to GEZE GmbH. Apparatus for controlling the closing sequence of double leaved doors. 4,583,324, Cl. 49-367.000.

Strasser, Rudolf: *See*—
Schmidhammer, Ludwig; Dummer, Gerhard; Haselwarter, Klaus; and Strasser, Rudolf, 4,584,123, Cl. 252-188.310.

Strickland, Joe D. Cover for an automobile radio assembly. 4,584,717, Cl. 455-345.000.

Strnad, Albert R.: *See*—
Karlin, David B.; Patel, Chandra K. N.; Wood, Obert R., II; Bridges, Thomas J.; and Strnad, Albert R., 4,583,539, Cl. 128-303.100.

Strobl, Georg, to Johnson Electric Industrial Manufactory Limited. Commutator with winding connections. 4,584,498, Cl. 310-236.000.

Strong, Hovey R.: *See*—
Halpern, Joseph Y.; Simons, Barbara B.; and Strong, Hovey R., 4,584,643, Cl. 364-200.000.

Stuff, Thomas W.: *See*—
Brauns, Frank; Walters, Charles S.; and Stuff, Thomas W., 4,584,578, Cl. 343-5.00R.

Sturner, William P.: *See*—
Gross, Robert E., Jr.; Heck, Teresa K.; Sturner, William P.; and Yeow, Yew-Thye, 4,583,812, Cl. 339-259.00R.

Sturza, Mark A.; Knitter, Wayne L.; and Wu, Yi-Zen, to Litton Systems, Inc. Apparatus and method for determining in-phase and quadrature-phase components. 4,584,652, Cl. 364-484.000.

Sudo, Hajime: *See*—
Takahara, Kenichi; and Sudo, Hajime, 4,583,794, Cl. 308-10.000.

Suemitsu, Takashi: *See*—
Suzuki, Shinichi; Mochizuki, Masami; and Suemitsu, Takashi, 4,584,552, Cl. 338-32.00H.

Sugawara, Ryo: *See*—
Nishimura, Tatsuo; Sugawara, Ryo; Ichitani, Takashi; and Obata, Susumu, 4,584,204, Cl. 426-643.000.

Sugawara, Toru: *See*—
Hashimoto, Kiyoshi; and Sugawara, Toru, 4,584,473, Cl. 250-251.000.

Sugie, Masuo: *See*—
Arakawa, Kazumi; Sugie, Masuo; Watanabe, Takashi; Nishio, Takumi; Kawamura, Toshio; Nagahata, Tsutomu; and Matsushita, Takashi, 4,583,721, Cl. 266-220.000.

Sugimoto, Yasuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Quantizer-subtractor circuit. 4,584,557, Cl. 340-347.0AD.

Sugita, Norio: *See*—
Nagai, Norimichi; Sugita, Norio; Horiishi, Nanao; Kiyama, Masao; and Takada, Toshio, 4,584,242, Cl. 428-403.000.

Sugita, Yutaka: *See*—
Takeuchi, Teruaki; Suzuki, Ryo; Kodama, Naoki; Takeshita, Masatoshi; Ikeda, Tadashi; Sato, Toshihiro; and Sugita, Yutaka, 4,584,668, Cl. 365-36.000.

Sugitawa, Chikara: *See*—
Kobayashi, Takuma; Kitagawa, Hironobu; Sugitawa, Chikara; and Kobayashi, Shigeo, 4,584,353, Cl. 525-438.000.

Sugiura, Akiyoshi: *See*—
Kawasawa, Toshio; Sato, Katsujiro; and Sugiura, Akiyoshi, 4,583,961, Cl. 474-113.000.

Sugiyama, Tadashi: *See*—
Inoue, Yuji; Iwaoka, Hideto; and Sugiyama, Tadashi, 4,584,548, Cl. 335-299.000.
Sulfaro, Anthony A.: *See*—
Gresock, Joseph A.; and Sulfaro, Anthony A., 4,583,295, Cl. 33-179.50R.
Sulzer-Escher Wyss Ltd.: *See*—
Schnyder, Eugen; and Guttinger, Heinz, 4,583,273, Cl. 29-113.0AD.
Sumi, Makoto: *See*—
Nakayama, Hiroshi; and Sumi, Makoto, 4,583,418, Cl. 74-475.000.
Sumikawa, Seiji: *See*—
Iijima, Takeo; Shitara, Mototaka; Sumikawa, Seiji; and Saito, Susumu, 4,583,922, Cl. 417-269.000.
Sumitomo Chemical Co., Ltd.: *See*—
Hamada, Kazuhiko; Suzukamo, Gohfu; Masuko, Fujio; and Nakamura, Makoto, 4,584,410, Cl. 568-436.000.
Ishiguri, Yukio; Takano, Hirotaka; and Funaki, Yuji, 4,584,309, Cl. 514-383.000.
Kadokura, Hidekimi; Umezaki, Hiroshi; and Murakami, Hideaki, 4,584,243, Cl. 428-403.000.
Kakugo, Masahiro; Fukui, Yoshiharu; Wakatsuki, Kizuku; Ima, Seiichiro; and Kimura, Junichi, 4,584,239, Cl. 428-349.000.
Mukaiyama, Teruaki; Sakito, Yoji; and Asami, Masatoshi, 4,584,387, Cl. 548-324.000.
Sumitomo Electric Industries: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, 4,584,171, Cl. 419-8.000.
Sumitomo Electric Industries, Ltd.: *See*—
Mori, Yoshikatsu; Dohi, Yoshio; and Fukagawa, Hideo, 4,583,888, Cl. 408-59.000.
Morioka, Mikio; and Shimizu, Atsushi, 4,584,174, Cl. 420-555.000.
Murakami, Kazuhito; and Takahashi, Kenichi, 4,583,821, Cl. 350-96.340.
Namba, Hirokuni; Osaka, Hajime; Kamon, Koichi; and Higuchi, Fuminori, 4,584,053, Cl. 156-603.000.
Sumitomo Metal Industries, Ltd.: *See*—
Hasegawa, Yoshii; Tsuruta, Takeshi; Kohgo, Takao; Nakamura, Masahiro; and Kishida, Tohru, 4,583,717, Cl. 266-44.000.
Sumitomo Metal Mining Company Limited: *See*—
Odaka, Takeo; and Miyashita, Hiroichi, 4,584,107, Cl. 210-760.000.
Sun Chemical Corporation: *See*—
Silverman, Stanley; and Ficon, Joseph, 4,584,480, Cl. 250-453.100.
Sun-Esu Co., Ltd.: *See*—
Saito, Kiyoshi; and Nanba, Mitsuo, 4,584,421, Cl. 585-241.000.
Sundstrand Corroration: *See*—
Mosher, Philip C., 4,583,696, Cl. 242-7.030.
Sunkist Growers, Inc.: *See*—
Borgman, Bradley N.; Cramer, Jerry W.; and Dossey, Don E., 4,583,910, Cl. 414-752.000.
Sunpower, Inc.: *See*—
Wood, James G., 4,583,364, Cl. 60-520.000.
Surie, Serge: *See*—
Levy, Michel; and Surie, Serge, 4,584,693, Cl. 375-54.000.
Surma, Ronald D.: *See*—
Wiblin, Wayne T.; Surma, Ronald D.; and Melocik, Grant C., 4,584,472, Cl. 250-237.00G.
Suslow, Trevor V., to University of California, The Regents of the. Bacteriophage-resistant plant growth promoting rhizobacteria. 4,584,274, Cl. 435-253.000.
Sussmeyer, Robert; Pluvinage, Alain; and Moensert, Christian, to Ateliers Sussmeyer SPRL. Apparatus for the fractionation of a mixture comprising at least one liquid volatile fraction. 4,584,062, Cl. 202-197.000.
Sustmann, Scarlet: *See*—
Schneider, Werner; and Sustmann, Scarlet, 4,583,980, Cl. 604-359.000.
Sutton, David L., to Halliburton Company. Environmentally compatable high density drilling mud, cement composition or blow-out fluid. 4,584,327, Cl. 523-130.000.
Suzukamo, Gohfu: *See*—
Hamada, Kazuhiko; Suzukamo, Gohfu; Masuko, Fujio; and Nakamura, Makoto, 4,584,410, Cl. 568-436.000.
Suzuki, Akio: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, 4,584,171, Cl. 419-8.000.
Suzuki, Akira; Oumi, Takeharu; Takamiya, Sanshiro; and Nakazawa, Hideo, to Aisin Seiki K.K. Artificial heart driving apparatus. 4,583,525, Cl. 128-1.00D.
Suzuki, Haruko: *See*—
Oodaira, Hiroshi; Suzuki, Haruko; Saito, Masayuki; and Iwase, Nobuo, 4,584,456, Cl. 219-121.0LM.
Suzuki, Kenji: *See*—
Fujii, Tsunenori; Suzuki, Kenji; Yoshida, Masahiro; Okawa, Hisashi; Koto, Kaoru; Ohmori, Hideki; Yokokura, Hisao; Okabe, Yoshiaki; Hattori, Shintaroo; Kitamura, Teruo; Mukoh, Akio; and Sato, Mikio, 4,584,120, Cl. 252-299.630.
Suzuki, Koji, to Canon Kabushiki Kaisha. Image recording apparatus having automatic image density regulation function. 4,583,839, Cl. 355-14.00R.
Suzuki, Masakuni; Maeyama, Sadao; Arai, Kiyoshi; Kaneko, Yoshio; and Fujito, Shohgo, to Sony Corporation. Circuit providing gamma, color and temperature compensation for thermal printer. 4,584,601, Cl. 358-80.000.
Suzuki, Mitsuo, to Hitachi, Ltd. Toner concentration detecting apparatus. 4,583,491, Cl. 118-689.000.
Suzuki, Nobuyuki: *See*—
Morioka, Satoshi; Shida, Makoto; Suzuki, Nobuyuki; and Sekihara, Kiyoshi, 4,584,134, Cl. 260-239.30P.
Suzuki, Ryo: *See*—
Takeuchi, Teruaki; Suzuki, Ryo; Kodama, Naoki; Takeshita, Masatoshi; Ikeda, Tadashi; Saito, Toshihiro; and Sugita, Yutaka, 4,584,668, Cl. 365-36.000.
Suzuki, Shinichi; Mochizuki, Masami; and Suemitsu, Takashi, to Pioneer Electronic Corporation. Hall element with improved composite substrate. 4,584,552, Cl. 338-32.00H.
Suzuki, Toshiaki; and Horikawa, Kazuo, to Fuji Photo Film Co., Ltd. Noise erasing method and apparatus for stimulable phosphor sheet. 4,584,482, Cl. 250-459.100.
Suzuki, Youji: *See*—
Arisawa, Takashi; Maruyama, Yoichiro; Suzuki, Youji; and Iwamoto, Kazumi, 4,584,072, Cl. 204-157.220.
Svoboda, George: *See*—
Dines, David R.; Svoboda, George; and Workman, Robert G., 4,583,674, Cl. 228-102.000.
Sweet, Edmund G. F., to Ontario Research Foundation. Ultrasonic density meter with damping. 4,583,393, Cl. 73-32.00A.
Sweig, Stephen J., to Arrem Plastics, Inc. Method for double-side thermoforming. 4,584,157, Cl. 264-522.000.
Swing Plane Systems, Inc.: *See*—
Ohly, Richard L., 4,583,740, Cl. 273-191.00A.
Swingline, Inc.: *See*—
Olesen, Paul, 4,583,276, Cl. 29-432.100.
Swiss Aluminium Ltd.: *See*—
Kesting, Marinus C., 4,584,019, Cl. 75-126.00A.
SWS Silicones Corporation: *See*—
Griswold, Roy M.; and Martin, Eugene R., 4,584,125, Cl. 252-358.000.
Pate, Michelle; and Getson, John C., 4,584,336, Cl. 524-443.000.
Sygnator, Henry A., to Illinois Tool Works Inc. Drill screw and cutters for making same. 4,583,898, Cl. 411-387.000.
Syntex (U.S.A.) Inc.: *See*—
Ullman, Edwin F., 4,584,277, Cl. 436-501.000.
System Development Corp.: *See*—
Miller, Bruce J., 4,584,719, Cl. 455-608.000.
Szabo , Andras I.: *See*—
Ottobre, Louis G.; Szabo , Andras I.; and Shung, Wu-Shi, 4,584,658, Cl. 364-721.000.
Szabo, Miklos T. Method for forming artificial islands. 4,583,882, Cl. 405-217.000.
Szarvas, Miklos: *See*—
Balint, Janos; Cseke, Laszlo ; Fabian, Ferenc; Kun, Lajos; and Szarvas, Miklos, 4,584,135, Cl. 260-351.600.
Tabuchi, Shuji, to Fujitsu Limited; and Disco Abrasive Systems, Ltd. Grinding machine. 4,583,325, Cl. 51-5.00R.
Tachikawa, Makoto: *See*—
Ohmae, Tsutomu; Matsuda, Toshihiko; and Tachikawa, Makoto, 4,584,528, Cl. 324-166.000.
Tachikawa Spring Co., Ltd.: *See*—
Hatsutta, Susumu; and Furukawa, Toshio, 4,583,781, Cl. 297-284.000.
Kanai, Shigeru, 4,583,783, Cl. 297-452.000.
Mikuniya, Kunio, 4,583,782, Cl. 297-440.000.
Taga, Yasunori; and Sawada, Yutaka, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Heat wave shielding lamination. 4,583,815, Cl. 350-1.600.
Taguchi, Jun; Kobayashi, Hiroomi; and Koyama, Takahiro. Process for the production of calcium cellulose glycolate. 4,584,370, Cl. 536-87.000.
Tainter, Leland B., Jr.; Goeppinger, Edward J.; King, William H.; and Smith, Ronald E., to Bourns, Inc. Low insertion-force socket for IC device. 4,583,806, Cl. 339-75.0MP.
Taiyo Gyogyo Kabushiki Kaisha: *See*—
Nishimura, Tatsuo; Sugawara, Ryo; Ichitani, Takashi; and Obata, Susumu, 4,584,204, Cl. 426-643.000.
Taiyo Yuden Kabushiki Kaisha: *See*—
Sasazawa, Kazuo; and Yamaoka, Nobutatsu, 4,584,282, Cl. 501-136.000.
Tajima, Hatsuo: *See*—
Kan, Fumitaka; Tajima, Hatsuo; Hosoi, Atsushi; Takenouchi, Masanori; and Saito, Takashi, 4,583,490, Cl. 118-658.000.
Takada, Toshio: *See*—
Nagai, Norimichi; Sugita, Norio; Horiishi, Nanao; Kiyama, Masao; and Takada, Toshio, 4,584,242, Cl. 428-403.000.
Takahara, Kenichi; and Sudo, Hajime, to Kabushiki Kaisha Toshiba. Electromagnetic bearing. 4,583,794, Cl. 308-10.000.
Takahashi, Kenichi: *See*—
Murakami, Kazuhito; and Takahashi, Kenichi, 4,583,821, Cl. 350-96.340.
Takahashi, Kenji: *See*—
Isokawa, Kenji; Namiki, Kunio; and Takahashi, Kenji, 4,584,032, Cl. 148-12.00B.
Takahashi, Kentaro; Hiraoka, Takeshi; Nakamura, Yoshikatsu; and Takeshita, Masajiro, to Nippon Piston Ring Co., Ltd. Wear-resistant member for use in an internal combustion engine. 4,583,502, Cl. 123-90.390.

Takahashi, Osamu, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material containing particles of redox compound and —COO— containing polymer. 4,584,263, Cl. 430-533.000.

Takahashi, Tomonori: *See*—
Matsui, Minoru; and Takahashi, Tomonori, 4,584,151, Cl. 264-65.000.

Takaishi, Naotake: *See*—
Tejima, Tohru; Nakamura, Koichi; Hattori, Michihiro; Masuda, Shinichi; Imokawa, Genji; and Takaishi, Naotake, 4,584,190, Cl. 424-59.000.

Takamiya, Sanshiro: *See*—
Suzuki, Akira; Oumi, Takeharu; Takamiya, Sanshiro; and Nakazawa, Hideo, 4,583,525, Cl. 128-1.00D.

Takamura, Yoshio; and Nakajima, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Multiple step-up rectifier circuit. 4,584,637, Cl. 363-61.000.

Takano, Hirotaka: *See*—
Ishiguri, Yukio; Takano, Hirotaka; and Funaki, Yuji, 4,584,309, Cl. 514-383.000.

Takaoka, Matsuo; Sasaki, Nobuo; Kawamura, Seiichiro; and Hataishi, Osamu, to Fujitsu Limited. Process for fabricating a semiconductor on insulator semiconductor device. 4,584,025, Cl. 148-1.500.

Takara Co., Ltd: *See*—
Matsuda, Takashi, 4,583,958, Cl. 446-308.000.

Takasaki, Takashi; and Iwamoto, Mitsunori, to Nihon Bussan Kabushiki Kaisha. Process for preparation of fish and shellfish extracts having pharmaceutical functions. 4,584,197, Cl. 424-95.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,584,290, Cl. 514-206.000.

Takaya, Takao; Masugi, Takashi; Ogino, Takashi; Takasugi, Hisashi; and Yamanaka, Hideaki, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,584,290, Cl. 514-206.000.

Takeda Riken Co., Ltd.: *See*—
Shimizu, Masao, 4,584,683, Cl. 371-25.000.

Takeda, Shunji; and Yuyama, Takeshi, to Du Pont de Nemours, E. I., and Company. Method for controlling weeds in paddy rice. 4,584,010, Cl. 71-92.000.

Takeda, Yoshinobu: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, 4,584,171, Cl. 419-8.000.

Takei, Toshio: *See*—
Ito, Sho; Nakaguchi, Tomoyuki; Kasahara, Kumio; Takei, Toshio; Hashimoto, Tsutomu; and Nakahara, Shojiro, 4,583,733, Cl. 273-26.00R.

Takekawa, Junjiro: *See*—
Niino, Masayuki; Yatsuyanagi, Nobuyuki; Kumakawa, Akinaga; Suzuki, Akio; Sasaki, Masaki; Gomi, Hiromi; Sakamoto, Hiroshi; Masuda, Yoshimichi; Watanabe, Ryuzo; Takekawa, Junjiro; Doi, Yoshihiko; Kuroishi, Nobuhito; Takeda, Yoshinobu; and Ochi, Shigeki, 4,584,171, Cl. 419-8.000.

Takemoto, Yoshiro: *See*—
Yamashita, Kazuichi; Saito, Toshio; Zin, Keiichi; and Takemoto, Yoshiro, 4,583,909, Cl. 414-749.000.

Takenouchi, Masanori: *See*—
Kan, Fumitaka; Tajima, Hatsuo; Hosoi, Atsushi; Takenouchi, Masanori; and Saito, Takashi, 4,583,490, Cl. 118-658.000.

Takeshita, Masajiro: *See*—
Takahashi, Kentaro; Hiraoka, Takeshi; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,583,502, Cl. 123-90.390.

Takeshita, Masatoshi: *See*—
Takeuchi, Teruaki; Suzuki, Ryo; Kodama, Naoki; Takeshita, Masatoshi; Ikeda, Tadashi; Sato, Toshihiro; and Sugita, Yutaka, 4,584,668, Cl. 365-36.000.

Takeuchi, Teruaki; Suzuki, Ryo; Kodama, Naoki; Takeshita, Masatoshi; Ikeda, Tadashi; Sato, Toshihiro; and Sugita, Yutaka, to Hitachi, Ltd. Magnetic bubble memory device. 4,584,668, Cl. 365-36.000.

Talbot, Lionel E.: *See*—
Tremblay, Joseph A.; and Talbot, Lionel E., 4,584,458, Cl. 219-137.710.

Tallant, James C., II, to RCA Corporation. Television receiver alignment system. 4,584,596, Cl. 358-10.000.

Talley, John J.; and Berman, Carol B., to General Electric Company. Flame retardant polyphenylene oxide thermoplastics. 4,584,332, Cl. 524-122.000.

Talley, John J., to General Electric Company. Method for preparing p-alkylphenols from p-hydroxyalkylphenols. 4,584,417, Cl. 568-799.000.

Tallgrass Technologies Corporation: *See*—
Allen, David M., 4,584,616, Cl. 360-48.000.

Tamagawa, Akira: *See*—
Mizokami, Kazunori; Kimura, Tadashi; Kikuchi, Juro; Tamagawa, Akira; Yunoki, Yutaka; and Nakamura, Kazuo, 4,584,610, Cl. 358-228.000.

Tamille Pty. Limited: *See*—
Blattmann, Lee D., 4,583,427, Cl. 74-760.000.

Tamir, Abraham: *See*—
Elperin, Freda; and Tamir, Abraham, 4,583,941, Cl. 431-347.000.

Tamura, Toshifumi: *See*—
Ozeki, Takeshi; Tamura, Toshifumi; and Fujihara, Mutsumi, 4,584,678, Cl. 370-85.000.

Tamura, Yutaka; and Tanaka, Ryohei, to Mitsubishi Petrochemical Co., Ltd. Polyphenylene ether resin composition. 4,584,331, Cl. 529-119.000.

Tanabe, Hiromi: *See*—
Komatsu, Fumiaki; Hirano, Seiichi; and Tanabe, Hiromi, 4,584,004, Cl. 55-422.000.

Tanabe, Takeshi, to Sharp Kabushiki Kaisha. Microwave heating appliance with simplified user's operation. 4,584,448, Cl. 219-10.55B.

Tanaka, Hideo: *See*—
Fujita, Shigeru; Banzai, Hideo; and Tanaka, Hideo, 4,583,931, Cl. 425-149.000.

Tanaka, Kazunobu; and Maruo, Zenichi, to Daicel Chemical Industries, Ltd. Heat-resistant, high-impact resin composition. 4,584,345, Cl. 525-67.000.

Tanaka, Kikuo; and Washio, Isomi, to Amada Company, Limited. Abrading machine for abrading a welded seam in an elongated workpiece. 4,583,326, Cl. 51-81.00R.

Tanaka, Masaru, to Horiba, Ltd. Multichannel time-voltage converter. 4,584,489, Cl. 307-264.000.

Tanaka, Ryohei: *See*—
Tamura, Yutaka; and Tanaka, Ryohei, 4,584,331, Cl. 529-119.000.

Tanaka, Yoshikazu: *See*—
Kumura, Haruyoshi; Yamamuro, Sigeaki; Tanaka, Yoshikazu; Hirano, Hiroyuki; and Abo, Keiju, 4,583,627, Cl. 192-0.076.

Tandem Computers Incorporated: *See*—
Bringuel, Martin C., 4,583,803, Cl. 339-45.00M.

Taneda, Kozo; Chiba, Masae; Naka, Junichi; and Watanabe, Shunichi, to Snow Brand Milk Products Co., Ltd. Transport apparatus for flat articles. 4,583,884, Cl. 406-73.000.

Tang, Robert H.; and Barter, James A., to PPG Industries, Inc. Alkyl percarbonates. 4,584,142, Cl. 558-264.000.

Tango, Yasuo; and Kanazaki, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparation of discontinuous filament bundles and sharp-ended filaments. 4,583,266, Cl. 19-0.390.

Tangorra, Giorgio, to Industrie Pirelli S.p.A. Differentiated action oscillation damping device. 4,583,621, Cl. 188-67.000.

Tani, Tatsuo: *See*—
Seko, Nachio; Tani, Tatsuo; Idenawa, Hiroyuki; Yano, Takashi; and Nakamura, Isao, 4,583,834, Cl. 355-14.00C.

Taniguchi, Akihiko; and Anzai, Shunju, to Sharp Kabushiki Kaisha. Abnormal condition detection device for corona discharger in electrophotographic copying machine. 4,583,836, Cl. 355-14.0CH.

Taniguchi, Toshihiko: *See*—
Yoshino, Tsunemi; Taniguchi, Toshihiko; and Ina, Hirohiko, 4,584,477, Cl. 250-351.000.

Tanikawa, Kowji, to Olympus Optical Co., Ltd. Apparatus for power-on data integrity check of inputted characters stored in volatile memory. 4,584,663, Cl. 364-900.000.

Tanner, David P.: *See*—
Mackamul, Kevin K.; Morel, Don L.; and Tanner, David P., 4,584,427, Cl. 136-256.000.

Tas, Adrianus W. Device for weight classification of crops. 4,583,636, Cl. 198-504.000.

Tassery, Michel, to Thomson-CSF. Audio recorder which can play back a temporal code irrespective of the speed of the magnetic tape. 4,584,618, Cl. 360-70.000.

Tate, Harold, Jr.: *See*—
Graves, J. W.; Tate, Harold, Jr.; and Cook, John U., 4,583,323, Cl. 47-67.000.

Tatemoto, Minoru: *See*—
Kumagai, Naotake; Tatemoto, Minoru; Itoh, Yoji; and Inuzuka, Tokushige, 4,583,503, Cl. 123-192.00R.

Taub, Alan I.; and Frischmann, Peter G., to General Electric Company. Hot working of amorphous alloys. 4,584,036, Cl. 148-120.000.

Taub Family Trust U/A: *See*—
Taub, Ronald H., 4,583,308, Cl. 40-124.400.

Taub, Ronald H., to Taub Family Trust U/A. Display flag for price label and inventory control. 4,583,308, Cl. 40-124.400.

Taurat, Dieter O.: *See*—
Gerking, Luder; and Taurat, Dieter O., 4,584,366, Cl. 528-502.000.

Taylor, Clive R., to U.S. Philips Corporation. Motor speed control arrangement. 4,584,507, Cl. 318-327.000.

Taylor, Robert W.: *See*—
Lyman, Richard R.; and Taylor, Robert W., 4,584,041, Cl. 156-156.000.

Taylor, Stephen L., to Aplin & Barrett, Ltd. Antibotulinal agents for high moisture process cheese products. 4,584,199, Cl. 426-36.000.

Taylor, Taliaferro H., Jr.; Johnk, Robert T.; and Garvin, Clifton W., to Ball Corporation. Radio frequency switching system using pin diodes and quarter-wave transformers. 4,584,543, Cl. 333-103.000.

Techy, Marcel, to Stenuick Freres. Hammer drill. 4,583,601, Cl. 173-134.000.

Tecle, Haile: *See*—
Downs, David A.; and Tecle, Haile, 4,584,301, Cl. 514-316.000.

Tejima, Tohru; Nakamura, Koichi; Hattori, Michihiro; Masuda, Shinichi; Imokawa, Genji; and Takaishi, Naotake, to Kao Corporation. Novel chalcone derivatives and ultraviolet absorbers comprising the same. 4,584,190, Cl. 424-59.000.

Tektronix, Inc.: *See*—
Buzak, Thomas S., 4,583,825, Cl. 350-335.000.
Penney, Bruce J., 4,584,559, Cl. 340-347.0SH.

Telecommunications Radioelectriques et Telephoniques T.R.T.: *See*—
Forestier, Alain; and Fenaux, Philippe, 4,584,576, Cl. 340-825.380.

Teledyne Industries, Inc.: *See*—
Merrick, Stanley J.; and Miller, Robert F., 4,584,459, Cl. 219-146.100.

Temple, Andrew W., to Brookes & Gatehouse Limited. Angular position sensor. 4,584,577, Cl. 340-870.320.
Teraoka, Fuminori: *See*—
Matsui, Kenji; and Teraoka, Fuminori, 4,583,701, Cl. 242-107.40A.
Terrell, Ross C.: *See*—
Huang, Bao-Shan; Terrell, Ross C.; Deutsche, Kirsten H.; Kudzma, Linas V.; and Lalinde, Nhora L., 4,584,303, Cl. 514-326.000.
Terry, James D. Animal training device. 4,583,493, Cl. 119-130.000.
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Duranleau, Roger G.; Triebel, Carol A.; and Lambert, Clifford L., 4,584,119, Cl. 252-75.000.
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Smith, Stuart B., 4,584,325, Cl. 521-99.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile machine for removing surface irregularities from a rail head of a railroad track. 4,583,895, Cl. 409-295.000.
Thevenon, Henri, to Les Cables de Lyon. Submarine power cable conductor. 4,584,432, Cl. 174-128.00R.
Thiele, Charles W., to Kenntnis, Inc. Vacuum receiver. 4,583,885, Cl. 406-168.000.
Thiers, Christiaan G., to AGFA-Gevaert, N.V. Photographic camera and its use in conjunction with photographic silver halide emulsion materials. 4,583,850, Cl. 355-91.000.
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Thomas, Albert M., to LTV Steel. Method for removing certain of the corrugations in a helically corrugated pipe. 4,583,389, Cl. 72-402.000.
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Thomson-CSF: *See*—
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Tassery, Michel, 4,584,618, Cl. 360-70.000.
Thornton, Roy F., to General Electric Company. Superconducting joint for superconducting wires and coils. 4,584,547, Cl. 335-216.000.
Thornton, William B.; and Borchert, Alfred E., to Atlantic Richfield Company. Purification of tertiary butyl hydroperoxide containing primary and secondary alkyl hydroperoxide contaminants. 4,584,413, Cl. 568-576.000.
Thorpe, John D.; and Joel, George, to Padley & Venables Limited. Mineral mining pick and holder assembly. 4,583,786, Cl. 299-81.000.
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Timmer, Bernhard H.; van der Hoef, Willem A.; and Beukeboom, Martinus T., to Polygram B.V. Arrangement for aligning and supplying flat prismatic articles. 4,583,635, Cl. 198-382.000.
Timmons, William J., to RCA Corporation. Getter flasher having a self-centering coil enclosure. 4,584,449, Cl. 219-10.570.
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Nakajima, Noriaki; Imaizumi, Toshimasa; and Anzai, Kazuhiro, 4,583,796, Cl. 312-214.000.
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Toloczko, Christine D. Cupcake holder. 4,583,955, Cl. 446-73.000.
Tom, Glenn M., to Hercules Incorporated. Cycloolefin purification method and polymerization composition. 4,584,425, Cl. 585-827.000.
Tomany, John P., to United States of America, Air Force. Missile control system test apparatus having video signal adapter. 4,584,524, Cl. 324-73.00R.
Tomiyama, Tsuyoshi, to Kotobuki Seiyaku Co., Ltd. Antihypertensive 1,5-benzothiazepine derivatives and compositions thereof. 4,584,292, Cl. 514-211.000.
Tomizawa, Yukio, to NEC Corporation. Laser beam machining apparatus. 4,584,455, Cl. 219-121.0LH.
Topre Corporation: *See*—
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Torterotot, Roland. Process for the preparation and heat treatment of food products and apparatus for performing said process. 4,583,453, Cl. 99-455.000.
Toshiba Ceramics Co., Ltd.: *See*—
Arakawa, Kazumi; Sugie, Masuo; Watanabe, Takashi; Nishio, Takumi; Kawamura, Toshio; Nagahata, Tsutomu; and Matsushita, Takashi, 4,583,721, Cl. 266-220.000.
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Brown, William W., Jr.; Curry, Wayne J.; Dahlke, Gerhard P.; Lupul, Francis T.; and Totta, Paul A., 4,583,488, Cl. 118-500.000.
Toulhoat, Herve ; Plumail, Jean-Claude; Mercier, Marc; and Jacquin, Yves, to Ste Francaise des Produits pour Catalyse Pro-Catalyse chez Institut Francais du Petrole. Process for the hydrotreatment of hydrocarbon oil employing catalysts based on alumina, silica or silica-alumina. 4,584,093, Cl. 208-216.00R.
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Towe, Bruce C. Noninvasive biomagnesonic method of biocurrent measurement. 4,583,545, Cl. 128-630.000.
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Treiber, Fritz F.; and Margraf, Dallas A., to Hobart Corporation. Extended film draw for film wrapping machine. 4,583,348, Cl. 53-441.000.
Trelewicz, Eric, to Motorola, Inc. Modulus control loop. 4,584,538, Cl. 331-1.00A.
Tremblay, Joseph A.; and Talbot, Lionel E., to Alcan International Limited. Welding wire feeder system for electric arc welding apparatus. 4,584,458, Cl. 219-137.710.
Treves, Gino R.; and Baum, Burton M., to FMC Corporation. Anticholinergic compounds. 4,584,378, Cl. 546-124.000.
Triebel, Carol A.: *See*—
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Tripodi, Daniel: *See*—
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Moracz, Donald J.; Cook, Charles R.; and Toth, Istvan J., 4,583,274, Cl. 29-156.80B.
Tschurbanoff, Aleksei. Cable winding system for electrically powered mine vehicles. 4,583,700, Cl. 242-86.510.
Tsubouchi, Kaoru; and Nishii, Michiharu, to Aisin Seiki Kabushiki Kaisha. Vacuum brake booster. 4,583,366, Cl. 60-547.100.
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Tuan, Hsing C.; and Thompson, Malcolm J., to Xerox Corporation. Marking head for fluid jet assisted ion projection imaging systems. 4,584,592, Cl. 346-159.000.
Tubaro, Aurelia; Della Loggia, Roberto; Banfi, Elena; Cinco, Marina; and Redaelli, Claudio, to Bonomelli S.p.A. Therapeutic compositions having antibacteric activity comprising a fraction extracted from camomile flowers and process for the preparation of said fraction. 4,584,198, Cl. 424-195.100.
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Turner, Burton S. Combined toothbrush and toothpaste dispenser. 4,583,563, Cl. 132-84.00R.
Turner, Keith: *See*—
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Turunen, Olli; Huttunen, Jouko; Ekman, Kurt; Eklund, Vidar; and Mandell, Leo, to Neste Oy. Procedure for treating cellulose derivative fibres. 4,583,984, Cl. 8-125.000.
Twigg, Martyn V.: *See*—
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Ullman, Edwin F., to Syntex (U.S.A.) Inc. Fluorescent multiparameter particle analysis. 4,584,277, Cl. 436-501.000.
Ulmer, Richard W., to Motorola, Inc. TTL to CMOS input buffer circuit for minimizing power consumption. 4,584,491, Cl. 307-475.000.
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Craig, Harold M.; and Feder, Ernest, 4,583,914, Cl. 416-204.00A.
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Universal Products, Inc.: *See*—
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Bucci, Enrico; Fronticelli-Bucci, Clara; and Hosmane, Ramachandra, 4,584,130, Cl. 260-112.00B.
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McCormick, Charles L.; and Blackmon, Kenneth P., 4,584,358, Cl. 526-240.000.
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Marshall, Norman B., 4,584,315, Cl. 514-456.000.
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Valarao, Bonifacio C. Device for the removal of foul air from toilet bowls. 4,583,250, Cl. 4-213.000.
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Shelangoskie, Donald R.; Brown, Jack H.; Jacobsen, Eric K.; Masterson, Patrick A.; Pierce, Ricky A.; Rogers, Barry A.; and Valentine, Lawrence J., 4,583,336, Cl. 52-250.000.
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Valyocsik, Ernest W., to Mobil Oil Corporation. Synthesis of crystalline silicate ZSM-35. 4,584,286, Cl. 502-62.000.
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Vanderpool, James L.; and Bain, James M., to Monarch Marking Systems, Inc. Hand-held labeler having improved web position sensing and print head control. 4,584,047, Cl. 156-361.000.
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Vanlerberghe, Guy; and Sebag, Henri, to L'Oreal. Perfluorinated surface-active oligomers and compositions for treating hair containing these oligomers. 4,584,196, Cl. 424-70.000.
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Reddy, Redreddy S.; Filoni, Toussaint; Fletcher, Kenneth S.; Shaanan, Gad J.; and Walsh, Anthony J., 4,583,466, Cl. 105-447.000.
Varela, Marco E., to Electrex, Inc. Digital direct reading grain moisture tester. 4,584,522, Cl. 324-61.00R.
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Varunes, Peter G. Method of mounting automotive seat covers. 4,583,279, Cl. 29-526.00A.
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VEB Kombinat Luft-und Kaltetechnik: *See*—
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Winckler, Lothar; Fuhrmann, Klaus; Graeser, Ulrich; and Wenning, Peter, 4,583,995, Cl. 48-197.00R.
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Venero, Aurelio O.; and Pestana, Ramon M. Compound 3-(1,2,3,6-tetrahydro-1,3-dimethyl-2,6-dioxopurine-7-acetyl-8-(2-phenylethyl)-1-oxa-3,8-diazaspiro-(4,5)decan-2-one and a process of preparation thereof. 4,584,372, Cl. 544-230.000.
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Viegas, Herman H., to Thermo King Corporation. Refrigerant suction accumulator, especially for transport refrigeration unit. 4,583,377, Cl. 62-503.000.
Vignon, Louis, to Heberlein Hispano S.A. Process for the spinning of fibers and a device for carrying out the process. 4,583,355, Cl. 57-5.000.
Vinn, Charles L., to Raytheon Company. Switchable current source circuitry having a current mirror and a switching transistor coupled in parallel. 4,584,520, Cl. 323-316.000.
Vitale, Mario L.; and Finazzo, Victor A., to McDonnell Douglas Corporation. Load transfer structure and method of making the same. 4,584,226, Cl. 428-105.000.
Vlock, David G. Fluid dispenser. 4,583,982, Cl. 604-310.000.
Vock, Manfred H.: *See*—
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Volk, Heinrich, to Esselte Pendaflex Corporation. Printing mechanism. 4,583,456, Cl. 101-111.000.
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Vollmer, Patricia J.; Schruben, Jeffrey J.; Montgomery, John P.; and Yang, Huei-Hsuing, to Genex Corporation. Method for stabilizing the enzymatic activity of phenylalanine ammonia lyase during L-phenylalanine production. 4,584,269, Cl. 435-108.000.
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Vora, Madhukar B.; and Hingarh, Hemraj K., to Fairchild Camera & Instrument Corp. Logic structure utilizing polycrystalline silicon Schottky diodes. 4,584,594, Cl. 357-15.000.
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Wagner, Eugene R., to Merrell Dow Pharmaceuticals Inc. Isoquinoline thromboxane synthetase inhibitors. 4,584,379, Cl. 546-147.000.
Wagner, Hans, to J. Strobel & Sohne GmbH & Co. Overhand sewing machine with clutch-actuated conveying disk drive. 4,583,477, Cl. 112-322.000.
Wagner, John P.; and Hsu, Edward C., to Exxon Research and Engineering Co. Electrode apparatus for electrostatically resolving emulsions. 4,584,083, Cl. 204-280.000.
Wagner, Robert: *See*—
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Wagner Systems Corporation: *See*—
Smith, Richard W., 4,583,302, Cl. 34-116.000.
Wagner, William R., to Rockwell International Corporation. Expander-cycle, turbine-drive, regenerative rocket engine. 4,583,362, Cl. 60-259.000.
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Walczak, Andrzej, to MAP Mikrofilm Apparatebau Dr. Poehler GmbH & Co KG. Device for focussing lens. 4,583,823, Cl. 350-255.000.
Waldenstrom, Mats G., to Santrade Limited. Wear part with high wear strength. 4,584,020, Cl. 75-236.000.
Waldorf Corporation: *See*—
Roccaforte, Harry I., 4,584,202, Cl. 426-111.000.
Walgenbach, Catherine A.: *See*—
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Walker, Wesley F., Jr., to Walker Equipment Corporation. Noise cancelling telephone transmitter insertable in telephone handset receptacle. 4,584,702, Cl. 381-71.000.
Wallhausser, Karl H.: *See*—
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Wallis, Bernard J. Nitrogen die cylinder. 4,583,722, Cl. 267-119.000.
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Walsh, John E.; and Longacre, James R. Precipitation gauge. 4,583,399, Cl. 73-171.000.
Walsh, Reed H., to Lubrizol Corporation, The. Sulfurized compositions and lubricants containing them. 4,584,113, Cl. 252-45.000.
Walter, James F.: *See*—
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Walters, Charles S.: *See*—
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Wandroik, Walter J. Artistic method and kit for creating an art form. 4,584,042, Cl. 156-280.000.
Wang, Pen-Chung; and Renga, James M., to Dow Chemical Company, The. Preparation of 1,3-bis(aryloxy)-2-propanols. 4,584,408, Cl. 568-48.000.
Wang, Samuel S.: *See*—
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Ward, John W., to Union Oil Company of California. Rare earth-containing Y zeolite compositions. 4,584,287, Cl. 502-65.000.
Ward, Richard, to Dobson Park Industries P/C. Valves. 4,583,709, Cl. 251-129.150.
Warncke, Niels, to J&J G.m.b.H. Method and apparatus for producing a cylindrical packing tube which is open at one end and closed at the other. 4,583,964, Cl. 493-308.000.
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Wason, Satish K., to J. M. Huber Corporation. Synthetic alkali metal aluminum silicates as pigment/colorant extenders and property enhancers in plastics. 4,584,330, Cl. 523-513.000.
Wasterberg, Gunnar K. Concrete pipe. 4,583,771, Cl. 285-230.000.
Watabe, Shin, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for controlling a temperature. 4,583,684, Cl. 236-78.00D.
Watanabe, Haruo: *See*—
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Watanabe, Hiroshi, to NEC Corporation. Semiconductor memory device with improved memory arrangement. 4,584,674, Cl. 365-230.000.
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Watanabe, Yoichiro: *See*—
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Webb, Jimmy L., to General Electric Company. Method and composition for preparing aromatic polycarboxylic acids and their anhydrides from polycarboximides. 4,584,388, Cl. 549-241.000.
Webb, Jimmy L.; and Olsen, Cathryn E., to General Electric Company. Bis(aminoalkyl)disiloxanes and method and intermediates for their preparation. 4,584,393, Cl. 556-407.000.
Weber, Adolf, to Diehl GmbH & Co. Method for attacking of target objects with smell bombs and a small bomb-carrier for implementing the method. 4,583,461, Cl. 102-489.000.
Weichenrieder, Erich, Sr., to Recycloplast AG. Face seal for shafts of machines processing synthetic resin. 4,583,748, Cl. 277-81.00R.
Weigel, Paul H., to Board of Regents, The University of Texas System. Dihydroxyacryl. 4,584,402, Cl. 564-154.000.
Weimer, Charles P., Jr., to International Paper Company. Bottom speed lock for container. 4,583,678, Cl. 229-39.00R.
Weinbeer, Franz-Josef: *See*—
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Weismantel, Steven E.: *See*—
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Weiss, Mario A., to Jaeger. Engine oil level detecting device. 4,584,554, Cl. 340-59.000.
Weisz, William, to Singer Company, The. Torque transmitting handwheel clip-on member for a sewing machine. 4,583,419, Cl. 74-552.000.
Welch, James B.: *See*—
Stephens, Barry D.; Morehead, Peter B.; and Welch, James B., 4,583,716, Cl. 256-13.100.
Weller, John E.: *See*—
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Wenzel, Martin; Schachschneider, Gert; and Nielsen, Jan, to Mallinckrodt, Diagnostica (Holland) B.V. Radiolabelled metallocene derivatives. 4,584,186, Cl. 424-1.100.
Wepfer, Robert M., to Westinghouse Electric Corp. Seismic snubber accommodating variable gaps in pressure vessels. 4,583,584, Cl. 165-82.000.
Werba, Hans. Analog/digital converter. 4,584,565, Cl. 340-347.0AD.
Werner, Alexander; and Pfenninger, Heinz, to Schweissindustrie Oerlikon Buhrle AG. Process, apparatus and installation for the continuous production of a filler wire. 4,584,169, Cl. 419-3.000.
Werner, Fred C., to C. Hager & Sons Hinge Manufacturing Company. Spring hinge. 4,583,262, Cl. 16-300.000.
Werth, Dee A.; Brush, Robert W., Sr.; and Pressel, Paul I., to Allied Corporation. Electrical connector assembly having means for EMI shielding. 4,583,809, Cl. 339-143.00R.
Wertheimer, Seev, to Iscar Ltd. Rotary slot cutting tools. 4,583,887, Cl. 407-116.000.
Wessel, Kenneth R., to Wessel, Kenneth R. Secure badge for infrared badge reader and process for making same. 4,583,766, Cl. 283-88.000.
West Coast Industries, Inc.: *See*—
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West Electric Company, Ltd.: *See*—
Yoshino, Tsunemi; Taniguchi, Toshihiko; and Ina, Hirohiko, 4,584,477, Cl. 250-351.000.
West, Jeffrey A., to Signetics Corporation. Input circuit for providing discharge path to enhance operation of switching transistor circuits. 4,584,490, Cl. 307-456.000.
Westerman, G. Wayne: *See*—
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Hankinson, Michael F., 4,584,163, Cl. 376-205.000.
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Ottobre, Louis G.; Szabo , Andras I.; and Shung, Wu-Shi, 4,584,658, Cl. 364-721.000.
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Zafred, Paolo R., 4,584,452, Cl. 219-69.00V.
Weston Bakeries Limited: *See*—
Reesor, Lorne J., 4,583,439, Cl. 83-867.000.
Weston, Robert E.: *See*—
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Harding, Margot J., 4,584,357, Cl. 525-54.210.
Whelchel, Robert C.: *See*—
Sanderson, Roger S.; and Whelchel, Robert C., 4,584,182, Cl. 422-310.000.
White, Cyril J.; and Joyce, Christopher, to BICC public limited company. Circuit board composite connectors. 4,583,801, Cl. 339-17.00C.
White, William P. Air operated press guard. 4,583,629, Cl. 192-130.000.
Whitehouse, Martin H.; and Combs, Robert L., to Byrne & Davidson Doors (N.S.W.) Pty. Limited. Mounting and stowing arrangements for rolling doors. 4,583,706, Cl. 248-251.000.
Whittle, Peter J.: *See*—
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Wiblin, Wayne T.; Surma, Ronald D.; and Melocik, Grant C., to Caterpillar Industrial Inc. Linear position encoder. 4,584,472, Cl. 250-237.00G.
Wichterle, Otto, to Ceskoslovenska Akademie Ved. Method and apparatus for measuring the shape of the eye. 4,583,830, Cl. 351-212.000.
Wiechert, Rudolf: *See*—
Nickish, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; Beier, Sybille; and Elger, Walter, 4,584,288, Cl. 514-172.000.
Wieczorek, Casey J., to AT&T Technologies, Inc. Hanger equipment for printed matter such as telephone directories. 4,583,708, Cl. 248-447.000.
Wiedrich, Charles R.; and Crano, John C., to PPG Industries, Inc. Method for producing vinyl chloride. 4,584,420, Cl. 570-227.000.
Wieland, Donald M.; Brown, Lawrence E.; Beierwaltes, William H.; and Wu, Jiann-long. Imaging agent and method of use. 4,584,187, Cl. 424-1.100.
Wigley, Thomas W., Jr. Skewering device. 4,583,263, Cl. 17-1.00S.
Wilcox-Baker, Paul V.: *See*—
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Wiley, Roy O., to Westinghouse Electric Corp. Multiple outlet receptacle. 4,583,799, Cl. 339-14.00R.
Wilks, David W. Evaporator lift. 4,583,712, Cl. 254-89.00R.
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Wilson, Robert B., to Dennison National Company. Ring binder cover. 4,583,877, Cl. 402-75.000.
Wilson, Ronald H., to General Electric Company. Method for nucleating and growing tungsten films. 4,584,207, Cl. 427-124.000.
Wimberley, Ronald J. Extensible apparatus. 4,583,907, Cl. 414-718.000.

Winckler, Lothar; Fuhrmann, Klaus; Graeser, Ulrich; and Wenning, Peter, to Veba Oel Entwicklungs-Gesellschaft mbH. Method of producing synthesis gas. 4,583,995, Cl. 48-197.00R.
Winckler, Lothar; Fuhrmann, Klaus; Graeser, Ulrich; and Wenning, Peter, to Veba Oel Entwicklungs-Gesellschaft mbH. Low temperature carbonization process for coal hydrogenation residues. 4,584,060, Cl. 201-32.000.
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Wolff, Horst; and Hani, Franz, to Speck-Kolbenpumpen-Fabrik Otto Speck KG. Plunger pump. 4,583,921, Cl. 417-269.000.
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Wong, Hee; Balakrishnan, Ramanatha V.; and Schneider, Herb O., to National Semiconductor Corporation. Digital PLL decoder. 4,584,695, Cl. 375-81.000.
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Zunkel, Gary D.; and Stepp, Lee W., to Halliburton Company. Hydraulically activated liner setting device. 4,583,593, Cl. 166-382.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF APRIL, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott, Philip A.; Dailey, James E.; Karsan, Demir I.; and Mangiavacchi, Andrea, to Brown & Root, Inc. Mooring and supporting apparatus and methods for a guyed marine structure. Re. 32,119, Cl. 405-227.000.

AT&T Bell Laboratories: *See*—
Atal, Bishnu S., Re. 32,124, Cl. 381-36.000.

Atal, Bishnu S., to AT&T Bell Laboratories. Predictive signal coding with partitioned quantization. Re. 32,124, Cl. 381-36.000.

Bayer Aktiengesellschaft: *See*—
Kramer, Wolfgang; and Elbe, Hans-Ludwig, Re. 32,122, Cl. 568-308.000.

Brown & Root, Inc.: *See*—
Abbott, Philip A.; Dailey, James E.; Karsan, Demir I.; and Mangiavacchi, Andrea, Re. 32,119, Cl. 405-227.000.

Dailey, James E.: *See*—
Abbott, Philip A.; Dailey, James E.; Karsan, Demir I.; and Mangiavacchi, Andrea, Re. 32,119, Cl. 405-227.000.

Duvall, David S.: *See*—
Gupta, Dinesh K.; and Duvall, David S., Re. 32,121, Cl. 428-656.000.

Elbe, Hans-Ludwig: *See*—
Kramer, Wolfgang; and Elbe, Hans-Ludwig, Re. 32,122, Cl. 568-308.000.

Godbersen, Byron L. Boat hoist. Re. 32,118, Cl. 187-1.00R.

Gupta, Dinesh K.; and Duvall, David S., to United Technologies Corporation. Overlay coatings for superalloys. Re. 32,121, Cl. 428-656.000.

Karsan, Demir I.: *See*—
Abbott, Philip A.; Dailey, James E.; Karsan, Demir I.; and Mangiavacchi, Andrea, Re. 32,119, Cl. 405-227.000.

Knight, Lindsay C., to Lomah Electronic Targetry, Inc. Discriminatory hit detection in target apparatus. Re. 32,123, Cl. 235-400.000.

Kramer, Wolfgang; and Elbe, Hans-Ludwig, to Bayer Aktiengesellschaft. 4-substituted 3,3-dimethyl-butan-2-ones, processes for their preparation and their use as intermediate products. Re. 32,122, Cl. 568-308.000.

Lomah Electronic Targetry, Inc.: *See*—
Knight, Lindsay C., Re. 32,123, Cl. 235-400.000.

Low, Jim Y., to Phillips Petroleum Company. Hydrotreating supercritical solvent extracts in the presence of alkane extractants. Re. 32,120, Cl. 208-11.0LE.

Mangiavacchi, Andrea: *See*—
Abbott, Philip A.; Dailey, James E.; Karsan, Demir I.; and Mangiavacchi, Andrea, Re. 32,119, Cl. 405-227.000.

Phillips Petroleum Company: *See*—
Low, Jim Y., Re. 32,120, Cl. 208-11.0LE.

United Technologies Corporation: *See*—
Gupta, Dinesh K.; and Duvall, David S., Re. 32,121, Cl. 428-656.000.

Weaver, Elbert K., to Wyman-Gordon Company. Forging process. Re. 32,117, Cl. 29-423.000.

Wyman-Gordon Company: *See*—
Weaver, Elbert K., Re. 32,117, Cl. 29-423.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Byers, Clifton A.: *See*—
Nelson, John P.; Dernovshek, Joseph F.; Miller, Hal E.; and Byers, Clifton A., B1 3,650,357, Cl. 188-71.500.

Dernovshek, Joseph F.: *See*—
Nelson, John P.; Dernovshek, Joseph F.; Miller, Hal E.; and Byers, Clifton A., B1 3,650,357, Cl. 188-71.500.

Fabel, Arthur J., to Metco, Inc. Powder feed device for flame spray guns. B1 3,976,332, 4-22-86, Cl. 406-14.000.

Goodyear Tire & Rubber Company, The: *See*—
Nelson, John P.; Dernovshek, Joseph F.; Miller, Hal E.; and Byers, Clifton A., B1 3,650,357, Cl. 188-71.500.

Grader, Ronald J.; and Johansen, Richard P., to Linde Aktiengesellschaft. Water ozonation method. B1 4,352,740, 4-22-86, Cl. 210-760.000.

Horton, George F. Bracket for mounting boat accessory. B1 1,028,176, 4-22-86, Cl. 248-642.000.

Johansen, Richard P.: *See*—
Grader, Ronald J.; and Johansen, Richard P., B1 4,352,740, Cl. 210-760.000.

Linde Aktiengesellschaft: *See*—
Grader, Ronald J.; and Johansen, Richard P., B1 4,352,740, Cl. 210-760.000.

Metco, Inc.: *See*—
Fabel, Arthur J., B1 3,976,332, Cl. 406-14.000.

Miller, Hal E.: *See*—
Nelson, John P.; Dernovshek, Joseph F.; Miller, Hal E.; and Byers, Clifton A., B1 3,650,357, Cl. 188-71.500.

Nelson, John P.; Dernovshek, Joseph F.; Miller, Hal E.; and Byers, Clifton A., to Goodyear Tire & Rubber Company, The. Disc brake with homogeneous brake stack. B1 3,650,357, 4-22-86, Cl. 188-71.500.

Stamicarbon, B.V.: *See*—
van Gasse, Rene L. E., B1 4,228,113, Cl. 264-24.000.

van Gasse, Rene L. E., to Stamicarbon, B.V. Process for making objects from mineral fillers bonded with a thermosetting resin. B1 4,228,113, 4-22-86, Cl. 264-24.000.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See*—
McCarthy, Alfred F., 283,503, Cl. D13-23.000.

Abe, Takeshi: *See*—
Shibayama, Masato; Abe, Takeshi; Asakawa, Yoshifumi; Kinoshita, Seiji; and Ogawa, Kazuhisa, 283,509, Cl. D14-53.000.

ADIDAS Fabrique de Chaussures de Sport: *See*—
Chassaing, Jacques, 283,463, Cl. D2-310.000.

Allen, James H., to 'totes', incorporated. Expandable travel bag. 283,465, 4-22-86, Cl. D3-71.000.

Alltrade Inc.: *See*—
Hillinger, George, 283,483, Cl. D8-47.000.

American Cyanamid Co.: *See*—
Morgan, John H.; and Grip, John A., 283,490, Cl. D9-404.000.

American Greetings Corporation: *See*—
Munson, Leo J.; Okada, David T.; Eicher, Charlotte; and Loomis, Bernard, 283,522, Cl. D21-63.000.
Petrosky, Lori A., 283,524, Cl. D21-128.000.

Shaffer, Ralph; Davidson, William; and Kucharik, Elena, 283,526, Cl. D21-159.000.
Shaffer, Ralph; Davidson, William; and Kucharik, Elena, 283,527, Cl. D21-159.000.
Shaffer, Ralph; and Davidson, William, 283,528, Cl. D21-159.000.
Aoki, Yoshihiro, to Application Art Laboratories Co., Ltd. Two-parts lock closure for portable containers. 283,484, 4-22-86, Cl. D8-331.000.
Appel, Mel, to Mel Appel Company, The. Desk top. 283,474, 4-22-86, Cl. D6-511.000.
Application Art Laboratories Co., Ltd.: *See*—
Aoki, Yoshihiro, 283,484, Cl. D8-331.000.
Asakawa, Yoshifumi: *See*—
Shibayama, Masato; Abe, Takeshi; Asakawa, Yoshifumi; Kinoshita, Seiji; and Ogawa, Kazuhisa, 283,509, Cl. D14-53.000.
Austin, James F. Novelty cap. 283,461, 4-22-86, Cl. D2-248.000.
Bailey, Phillip J. Cask cooler. 283,480, 4-22-86, Cl. D7-77.000.
Baker, Aubrey H. R., to CPG Products Corp. Toy figure. 283,529, 4-22-86, Cl. D21-171.000.
Balint, Margit C. Ball puzzle. 283,523, 4-22-86, Cl. D21-104.000.
Baus, Andre E. J., to Goodyear Tire & Rubber Company, The. Tire. 283,498, 4-22-86, Cl. D12-143.000.
Begley, Voula. Toy clown figure or similar article. 283,519, 4-22-86, Cl. D21-173.000.
Brillo, Jerome; and Dooley, Harry H., to TLS Systems, Inc. Self-powered drogue light. 283,552, 4-22-86, Cl. D26-24.000.
Burkinshaw, Phillip J. Extrusion. 283,549, 4-22-86, Cl. D25-74.000.
Campbell, Dennis D.: *See*—
Reed, Stewart D.; and Campbell, Dennis D., 283,497, Cl. D12-91.000.
Chassaing, Jacques, to ADIDAS Fabrique de Chaussures de Sport. High-top shoe. 283,463, 4-22-86, Cl. D2-310.000.
Cortez, Lydia C. Novelty doll. 283,520, 4-22-86, Cl. D21-175.000.
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Baker, Aubrey H. R., 283,529, Cl. D21-171.000.
Crescent Dental Mfg. Co.: *See*—
Rhoades, Nolan K., 283,540, Cl. D24-10.000.
Daenen, Robert H. C. M.: *See*—
Swett, James B.; Herlow, Erik; and Daenen, Robert H. C. M., 283,479, Cl. D7-54.000.
Daly, John J.: *See*—
Levin, Monte L.; and Daly, John J., 283,505, Cl. D13-38.000.
Dart Industries Inc.: *See*—
Schmidt, Janice L., 283,478, Cl. D7-19.000.
Schmidt, Janice L., 283,481, Cl. D7-82.000.
Swett, James B.; Herlow, Erik; and Daenen, Robert H. C. M., 283,479, Cl. D7-54.000.
Davidson, William: *See*—
Shaffer, Ralph; Davidson, William; and Kucharik, Elena, 283,526, Cl. D21-159.000.
Shaffer, Ralph; Davidson, William; and Kucharik, Elena, 283,527, Cl. D21-159.000.
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Davis Walker Corporation: *See*—
Ghizzi, Mario, 283,547, Cl. D25-45.000.
Denicotea, Inc.: *See*—
Nathan, Michael, 283,546, Cl. D24-99.000.
Doherty, Robert J.: *See*—
Mansueto, Richard M., 283,476, Cl. D7-9.000.
Dooley, Harry H.: *See*—
Brillo, Jerome; and Dooley, Harry H., 283,552, Cl. D26-24.000.
Dunn, James P., to MicroOffice Systems Technology. Portable computer. 283,511, 4-22-86, Cl. D14-106.000.
Durand, Jean-Jacques. Tumbler or similar article. 283,477, 4-22-86, Cl. D7-14.000.
Durand, Jean-Jacques. Saucepan or similar article. 283,482, 4-22-86, Cl. D7-361.000.
Edwards, Gordon D., to Metal Box p.l.c. Blank for tray type carton. 283,491, 4-22-86, Cl. D9-433.000.
Efcor Inc.: *See*—
Fogel, Robert; and Guginsky, Frank, 283,486, Cl. D8-396.000.
Eicher, Charlotte: *See*—
Munson, Leo J.; Okada, David T.; Eicher, Charlotte; and Loomis, Bernard, 283,522, Cl. D21-63.000.
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Fitzsimmons, Douglas: *See*—
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Fogel, Robert; and Guginsky, Frank, to Efcor Inc. Separable conduit coupling or the like. 283,486, 4-22-86, Cl. D8-396.000.
Fossum, Richard L. Solar collector. 283,536, 4-22-86, Cl. D23-72.000.
Fritzhand, Rudolph B. Clothes hanger. 283,467, 4-22-86, Cl. D6-319.000.
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Funai, Tetsuro, 283,521, Cl. D21-13.000.
Funai, Tetsuro, to Funai Electric Company Limited. Video game housing. 283,521, 4-22-86, Cl. D21-13.000.
Gardellini, Vedasto. Escrow box for coin operated machines. 283,518, 4-22-86, Cl. D20-8.000.
Ghizzi, Mario, to Davis Walker Corporation. Chain link fencing. 283,547, 4-22-86, Cl. D25-45.000.
Goccia S.r.l.: *See*—
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Goodyear Tire & Rubber Company, The: *See*—
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Graas, Maurice; and Kneip, Joe, 283,500, Cl. D12-147.000.
Hammond, Philip S., 283,499, Cl. D12-146.000.
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Goto, Tetsuya: *See*—
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Graas, Maurice; and Kneip, Joe, to Goodyear Tire & Rubber Company, The. Tire. 283,500, 4-22-86, Cl. D12-147.000.
Greco, Vincent. Side rail for rolling gates. 283,550, 4-22-86, Cl. D25-74.000.
Grip, John A.: *See*—
Morgan, John H.; and Grip, John A., 283,490, Cl. D9-404.000.
Guginsky, Frank: *See*—
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Hammond, Philip S., to Goodyear Tire & Rubber Company, The. Tire. 283,499, 4-22-86, Cl. D12-146.000.
Herlow, Erik: *See*—
Swett, James B.; Herlow, Erik; and Daenen, Robert H. C. M., 283,479, Cl. D7-54.000.
Hillinger, George, to Alltrade Inc. Roller-equipped wedge. 283,483, 4-22-86, Cl. D8-47.000.
Hinkel, Walter W., to Goodyear Tire & Rubber Company, The. Tire. 283,502, 4-22-86, Cl. D12-148.000.
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Shibayama, Masato; Abe, Takeshi; Asakawa, Yoshifumi; Kinoshita, Seiji; and Ogawa, Kazuhisa, 283,509, Cl. D14-53.000.
Hitzky, Leo J., to Goodyear Tire & Rubber Company, The. Tire. 283,501, 4-22-86, Cl. D12-147.000.
Holewinski, Robert D.; and Fitzsimmons, Douglas, to Johnson & Johnson Dental Products Company. Packaging container for dental articles. 283,487, 4-22-86, Cl. D9-341.000.
Holland, Darrell E.; and Holland, William P. Long rifle. 283,532, 4-22-86, Cl. D22-6.000.
Holland, William P.: *See*—
Holland, Darrell E.; and Holland, William P., 283,532, Cl. D22-6.000.
Hsu, Jian T. Clock-radio. 283,510, 4-22-86, Cl. D14-73.000.
Huang, Tsung-Hsiung. Pen. 283,516, 4-22-86, Cl. D19-41.000.
Huffman, Ronald E., to KV33 Corporation. Molded full base dental cast with pedestal. 283,541, 4-22-86, Cl. D24-16.000.
Huffman, Ronald E., to KV33 Corporation. Molded full base dental cast. 283,542, 4-22-86, Cl. D24-16.000.
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Iwata Electric Works Co., Ltd.: *See*—
Nakamoto, Takayuki, 283,543, Cl. D24-27.000.
Jencks, David C. Folded frame for an electric solenoid. 283,506, 4-22-86, Cl. D13-99.000.
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Kent, Devere P. Partitioned desk unit. 283,471, 4-22-86, Cl. D6-421.000.
Khachatoorian, Haig; and Hughes, James S., to Simuflite Training International, Inc. Simulator enclosure or similar article. 283,517, 4-22-86, Cl. D19-63.000.
Kingma, Klaas: *See*—
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Kneip, Joe: *See*—
Graas, Maurice; and Kneip, Joe, 283,500, Cl. D12-147.000.
Kohler Co.: *See*—
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Kohler, Herbert V., Jr., to Kohler Co. Combined cloverleaf spa and table therefor. 283,545, 4-22-86, Cl. D24-38.000.
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Shaffer, Ralph; Davidson, William; and Kucharik, Elena, 283,526, Cl. D21-159.000.
Shaffer, Ralph; Davidson, William; and Kucharik, Elena, 283,527, Cl. D21-159.000.
KV33 Corporation: *See*—
Huffman, Ronald E., 283,541, Cl. D24-16.000.
Huffman, Ronald E., 283,542, Cl. D24-16.000.
Leis, Harvey M. Lamp base. 283,504, 4-22-86, Cl. D13-25.000.
Levi, Sandro, to Goccia S.r.l. Wall lamp. 283,555, 4-22-86, Cl. D26-85.000.
Levin, Monte L.; and Daly, John J., to Square D Company. Door bell push button. 283,505, 4-22-86, Cl. D13-38.000.
Levoy, Barton M. Eyeglasses. 283,514, 4-22-86, Cl. D16-117.000.
Li, Robert S. K. Combined ruler and clock. 283,493, 4-22-86, Cl. D10-2.000.
Li, Robert S. K. Combined ruler and solar cell calculator. 283,515, 4-22-86, Cl. D18-2.000.

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Mace, Robert E., to Standard Havens, Inc. Filter bag tensioning spacer. 283,538, 4-22-86, Cl. D23-163.000.
Mansueto, Richard M., to Doherty, Robert J. Mug or similar article. 283,476, 4-22-86, Cl. D7-9.000.
McCarthy, Alfred F., to Aavid Engineering, Inc. Slide-on heat sink for encased electrical packages. 283,503, 4-22-86, Cl. D13-23.000.
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Munson, Leo J.; Okada, David T.; Eicher, Charlotte; and Loomis, Bernard, to American Greetings Corporation. Crib ferris wheel toy. 283,522, 4-22-86, Cl. D21-63.000.
Naka, Hiromitsu. Access door. 283,548, 4-22-86, Cl. D25-48.000.
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Nathan, Michael, to Denicotea, Inc. Medical bag. 283,546, 4-22-86, Cl. D24-99.000.
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Nitsch, Reinhold. Pour spout for a can or the like. 283,492, 4-22-86, Cl. D9-436.000.
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Ogden, Marco T. Case for cymbals. 283,464, 4-22-86, Cl. D3-30.100.
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Stevens, James T., 283,489, Cl. D9-345.000.
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Reece, Rebecca. Combined seat and armrest cover unit for a child's car seat. 283,475, 4-22-86, Cl. D6-611.000.
Reed, Stewart D.; and Campbell, Dennis D. Automobile. 283,497, 4-22-86, Cl. D12-91.000.
Repasky, John. Paving block. 283,551, 4-22-86, Cl. D25-80.000.
Rhoades, Nolan K., to Crescent Dental Mfg. Co. Dental amalgamator. 283,540, 4-22-86, Cl. D24-10.000.
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Schmidt, Janice L., to Dart Industries Inc. Food tray or the like. 283,478, 4-22-86, Cl. D7-19.000.
Schmidt, Janice L., to Dart Industries Inc. Food container or the like. 283,481, 4-22-86, Cl. D7-82.000.
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Sekiden Co., Ltd.: *See—*
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Shaffer, Ralph; Davidson, William; and Kucharik, Elena, to American Greetings Corporation. Toy bear figure. 283,527, 4-22-86, Cl. D21-159.000.
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Shibayama, Masato; Abe, Takeshi; Asakawa, Yoshifumi; Kinoshita, Seiji; and Ogawa, Kazuhisa, to Hitachi, Ltd. Telephone. 283,509, 4-22-86, Cl. D14-53.000.
Silver, William, to Thomson Leeds Company Inc. Counter merchandiser with price display. 283,473, 4-22-86, Cl. D6-467.000.
Simmons, Jimmy C. Radio signal controlled laser beam interrupting ditch slope indicator. 283,494, 4-22-86, Cl. D10-65.000.
Simuflite Training International, Inc.: *See—*
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Smith, Michael S., to Illirrie Holdings Pty. Ltd. Sailboard hull. 283,531, 4-22-86, Cl. D21-228.000.
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Spero, Harold A. Baseball safety spectacles. 283,513, 4-22-86, Cl. D16-102.000.
Square D Company: *See—*
Levin, Monte L.; and Daly, John J., 283,505, Cl. D13-38.000.
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Mace, Robert E., 283,537, Cl. D23-163.000.
Mace, Robert E., 283,538, Cl. D23-163.000.
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Purkapile, Emerson J., 283,539, Cl. D24-10.000.
Teledex: *See—*
Van Gilluwe, Frank L., 283,507, Cl. D14-62.000.
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Silver, William, 283,473, Cl. D6-467.000.
TLS Systems, Inc.: *See—*
Brillo, Jerome; and Dooley, Harry H., 283,552, Cl. D26-24.000.
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Allen, James H., 283,465, Cl. D3-71.000.
Truchet, Gaston, to S.A. des Etablissements Staubli. Air blower. 283,535, 4-22-86, Cl. D23-17.000.
Umino, Toshio; Saito, Yasuhiro; and Goto, Tetsuya, to Ricoh Company, Ltd. Electrostatic copying machine. 283,512, 4-22-86, Cl. D16-31.000.
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3S S.A.: *See—*
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CLASSIFICATION OF PATENTS

ISSUED APRIL 22, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2.1 A 4,583,246
69 4,583,247
164 4,583,248
220 4,583,249

CLASS 4

213 4,583,250
555 4,583,251
584 4,583,252

CLASS 5

94 4,583,253
451 4,583,254
453 4,583,255

CLASS 7

158 4,583,256

CLASS 8

125 4,583,984
137 4,583,985
405 4,583,986
495 4,583,987
543 4,583,988
4,583,989

CLASS 15

93 R 4,583,257
249 4,583,258
250.42 4,583,259
328 4,583,260

CLASS 16

238 4,583,261
300 4,583,262

CLASS 17

1 S 4,583,263
41 4,583,264
55 4,583,265

CLASS 19

0.39 4,583,266
99 4,583,267

CLASS 24

20 R 4,583,268
495 4,583,269

CLASS 29

80 4,583,270
90 B 4,583,271
110 4,583,272
113 AD 4,583,273
156.8 B 4,583,274
278 4,583,275
423 Re.32,117
432.1 4,583,276
456 4,583,277
467 4,583,278
526 A 4,583,279
563 4,583,280
576 W 4,583,281
4,583,282
589 4,583,283
611 4,583,284
623.5 4,583,285
730 4,583,286
741 4,583,287
4,583,288
749 4,583,289
874 4,583,290

CLASS 30

383 4,583,291

CLASS 33

1 M 4,583,292
126.4 R 4,583,293
138 4,583,294
179.5 R 4,583,295
366 4,583,296
502 4,583,298
533 4,583,297

CLASS 34

10 4,583,299
50 4,583,300
73 4,583,301
116 4,583,302

CLASS 36

95 4,583,303
113 4,583,304
119 4,583,305
4,583,306

CLASS 37

233 4,583,307

CLASS 40

124.4 4,583,308
152 4,583,309
592 4,583,310
611 4,583,311
621 4,583,312

CLASS 43

17.1 4,583,313
25 4,583,314
54.1 4,583,315
61 4,583,316
4,583,317

CLASS 44

51 4,583,990
72 4,583,991

CLASS 47

1.5 4,583,318
1.7 4,583,319
57.6 4,583,320
58 4,583,321
66 4,583,322
67 4,583,323

CLASS 48

76 4,583,992
197 R 4,583,993
4,583,994
4,583,995

CLASS 49

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CLASS 51

5 R 4,583,325
81 R 4,583,326
178 4,583,327
251 4,583,328
410 4,583,329

CLASS 52

2 4,583,330
4,583,331
73 4,583,332
90 4,583,333
98 4,583,334
182 4,583,335
250 4,583,336
302 4,583,337
456 4,583,338
466 4,583,339
484 4,583,340
589 4,583,341
714 4,583,342
721 4,583,359
749 4,583,343
750 4,583,344

CLASS 53

77 4,583,345
431 4,583,346
434 4,583,347
441 4,583,348
459 4,583,349
478 4,583,350
501 4,583,351
570 4,583,352

CLASS 55

16 4,583,996
31 4,583,997
45 4,583,998
68 4,583,999
73 4,584,000
162 4,584,001
257 PP 4,584,002
269 4,584,003
422 4,584,004
499 4,584,005

CLASS 56

8 4,583,353
16.6 4,583,354

CLASS 57

5 4,583,355
22 4,583,356
243 4,583,357
281 4,583,358

CLASS 60

39.03 4,583,360
39.462 4,583,361
259 4,583,362
276 4,583,363
426 4,583,371
520 4,583,364
531 4,583,365
547.1 4,583,366
605 4,583,367
639 4,583,368
657 4,583,369
688 4,583,370

CLASS 62

30 4,584,006
53 4,583,372
196.3 4,583,373
210 4,583,374
341 4,583,375
382 4,583,376
503 4,583,377
505 4,583,378

CLASS 63

2 4,583,379

CLASS 65

337 4,584,007

CLASS 66

64 4,583,380

CLASS 70

95 4,583,381
107 4,583,382
408 4,583,383

CLASS 71

76 4,584,008
88 4,584,009
92 4,584,010
93 4,584,011
4,584,012
94 4,584,013
113 4,584,014

CLASS 72

8 4,583,384
90 4,583,385
92 4,583,386
201 4,583,387
393 4,583,388
402 4,583,389
416 4,583,390
461 4,583,391

CLASS 73

7 4,583,392
32 A 4,583,393
40.7 4,583,394
55 4,583,395
59 L 4,583,406
61 R 4,583,396
152 4,583,397
156 4,583,398
171 4,583,399
247 4,583,400
295 4,583,401
304 C 4,583,402
517 B 4,583,404
584 4,583,405
762 4,583,407
840 4,583,408
861.25 4,583,409
861.28 4,583,410
862.09 4,583,411

CLASS 74

87 4,583,414
207 4,583,415
393 4,583,412
410 4,583,413
467 4,583,416
473 R 4,583,417
475 4,583,418
552 4,583,419
557 4,583,420
586 4,583,421
594.2 4,583,422
689 4,583,423
710.5 4,583,424
730 4,583,425
733 4,583,426
760 4,583,427
785 4,583,428

CLASS 75

10 V 4,584,015
35 4,584,016
77 4,584,017
84.5 4,584,018
126 A 4,584,019
236 4,584,020

CLASS 81

3.55 4,583,429
177.85 4,583,430

CLASS 82

1 C 4,583,431
4,583,432
4,583,433
36 R 4,583,434

CLASS 83

90 4,583,435
104 4,583,436
304 4,583,437
555 4,583,438
867 4,583,439

CLASS 84

318 4,583,440
376 K 4,583,441
413 4,583,442
484 4,583,443

CLASS 89

14.2 4,583,445
36.13 4,583,444

CLASS 91

369 A 4,583,446

CLASS 92

7 4,583,447

CLASS 98

2.08 4,583,448

CLASS 99

279 4,583,449
4,583,450
423 4,583,451
427 4,583,452
455 4,583,453
468 4,583,454
519 4,583,455

CLASS 101

111 4,583,456
4,583,457
126 4,583,458
217 4,583,459
375 4,583,460

CLASS 102

489 4,583,461

CLASS 104

48 4,583,462
189 4,583,463

CLASS 105

171 4,583,464
215 C 4,583,465
447 4,583,466

CLASS 106

14.42 4,584,021
100 4,584,022
273 R 4,584,023

CLASS 108

19 4,583,467

CLASS 110

246 4,583,468
346 4,583,469
4,583,470

CLASS 111

2 4,583,471

CLASS 112

132 4,583,472
217.3 4,583,474
235 4,583,475
275 4,583,476
322 4,583,477
413 4,583,478
465 4,583,473

CLASS 114

345 4,583,479
347 4,583,480

CLASS 116

28 R 4,583,481
204 4,583,483
209 4,583,482
268 4,583,484

CLASS 118

68 4,583,485
308 4,583,486
4,583,487
500 4,583,488
653 4,583,489
658 4,583,490
689 4,583,491
723 4,583,492

CLASS 119

130 4,583,493

CLASS 122

20 B 4,583,494
251 4,583,495
379 4,583,496
448 B 4,583,497

CLASS 123

41 R 4,583,498
41.1 4,583,499
73 AD 4,583,500
90.15 4,583,501
90.39 4,583,502
192 R 4,583,503
195 R 4,583,504
198 F 4,583,505
357 4,583,506
425 4,583,507
449 4,583,508
451 4,583,509
458 4,583,510
545 4,583,511
557 4,583,512

CLASS 124

20 A 4,583,513
78 4,583,514

CLASS 125

15 4,583,515

CLASS 126

121 4,583,516
135 4,583,517
201 4,583,518
418 4,583,519
424 4,583,520
451 4,583,521

CLASS 127

66 4,584,024

CLASS 128

1 A 4,583,522
1 D 4,583,523
4,583,525
1 R 4,583,524
6 4,583,526
11 4,583,527
4,583,528
24 A 4,583,529
65 4,583,530
66 4,583,531
75 4,583,532
4,583,533
80 R 4,583,534
201.11 4,583,536
201.25 4,583,535
303 B 4,583,537
4,583,538
303.1 4,583,539
330 4,583,540
335 4,583,541
341 4,583,542
419 P 4,583,543
482 4,583,544
630 4,583,545
638 4,583,546
639 4,583,547
4,583,548
640 4,583,549
4,583,551
644 4,583,550
663 4,583,552
704 4,583,553
774 4,583,554
782 4,583,555
804 4,583,556

CLASS 131

84.1 4,583,557
284 4,583,558
304 4,583,559
336 4,583,560

CLASS 132

9 4,583,561
4,583,562
84 R 4,583,563
91 4,583,564

CLASS 136

253 4,584,426
256 4,584,427
257 4,584,428

CLASS 137

1 4,583,565
101.19 4,583,566
115 4,583,567
240 4,583,568
246.22 4,583,569
340 4,583,570

CLASS 141

83 4,583,571
97 4,583,572
250 4,583,573

CLASS 144

172 4,583,574
208 B 4,583,575
246 E 4,583,576

CLASS 148

1 4,583,608
1.5 4,584,025
4,584,026
4,584,027
4,584,028
2 4,584,029
11.5 F 4,584,030
12 B 4,584,032
12 E 4,584,031
14 4,584,033
31 4,584,034
36 4,584,035
120 4,584,036

CLASS 150

52 R 4,583,577

CLASS 156

69 4,584,037
132 4,584,038
150 4,584,039
152 4,584,040
156 4,584,041
280 4,584,042
297 4,584,043
344 4,584,044
345 4,584,045
358 4,584,046
361 4,584,047
384 4,584,048
396 4,584,049
406.2 4,584,050
463 4,584,051
473 4,584,052
603 4,584,053
609 4,584,054
628 4,584,055
630 4,584,056

CLASS 157

1.1 4,583,578

CLASS 162

16 4,584,057

199 4,584,058
361 4,584,059

CLASS 164

457 4,583,579
469 4,583,580
529 4,583,581

CLASS 165

32 4,583,582
46 4,583,583
82 4,583,584
94 4,583,585
95 4,583,586
104.26 4,583,587
173 4,583,588

CLASS 166

60 4,583,589
216 4,583,590
217 4,583,591
228 4,583,594
250 4,583,592
264 4,583,595
332 4,583,596
382 4,583,593

CLASS 169

61 4,583,597

CLASS 172

126 4,583,598
730 4,583,599

CLASS 173

124 4,583,600
134 4,583,601

CLASS 174

18 4,584,429
67 4,584,430
107 4,584,431
128 R 4,584,432
152 GM 4,584,433

CLASS 175

4.2 4,583,602
324 4,583,603
346 4,583,604

CLASS 177

50 4,583,605
208 4,583,606
244 4,583,607

CLASS 179

2 A 4,584,434
6.03 4,584,435
37 4,584,436
107 E 4,584,437
115.5 DV 4,584,438
115.5 PV 4,584,439
159 4,584,440
170.2 4,584,441

CLASS 180

65.5 4,583,609
143 4,583,610
197 4,583,611
227 4,583,612
283 4,583,613
295 4,583,614

CLASS 181

210 4,583,615

CLASS 182

49 4,583,616
142 4,583,617
223 4,583,618

CLASS 186

59 4,583,619

CLASS 187

1 R Re.32,118
8.75 4,583,620

CLASS 188

67 4,583,621
71.5 B1 3,650,357
79.5 K 4,583,622
264 G 4,583,623

CLASS 191

12.2 R 4,584,442

CLASS 192

0.076 4,583,627
3.22 4,583,624
58 A 4,583,625
70.25 4,583,626
76 4,583,628
130 4,583,629

CLASS 194

227 4,583,630

CLASS 198

341 4,583,634
345 4,583,631
382 4,583,635
407 4,583,632
459 4,583,633
504 4,583,636
787 4,583,637

CLASS 200

6 A 4,584,443
52 R 4,584,444
144 B 4,584,445
153 S 4,584,446

CLASS 201

32 4,584,060

CLASS 202

185.6 4,584,061
197 4,584,062

CLASS 203

51 4,584,063
89 4,584,064

CLASS 204

11 4,584,065
28 4,584,066
33 4,584,067
68 4,584,068
74 4,584,069
4,584,070
98 4,584,071
157.2 4,584,073
157.22 4,584,072
181.1 4,584,074
182.3 4,584,075
182.4 4,584,076
4,584,077
192 R 4,584,078
192 S 4,584,079
255 4,584,080
272 4,584,081
278 4,584,082
280 4,584,083
290 F 4,584,084
290 R 4,584,085
429 4,584,086

CLASS 206

0.7 4,583,638
325 4,583,639
328 4,583,640
330 4,583,641
390 4,583,642
438 4,583,643

CLASS 208

11 LE Re.32,120
4,584,087
4,584,088
65 4,584,089
80 4,584,090
114 4,584,091
188 4,584,092
216 R 4,584,093

CLASS 209

17 4,584,094
166 4,584,095
4,584,096
4,584,097
430 4,584,098
660 4,583,644
694 4,583,645

CLASS 210

203 4,584,099
225 4,584,100
474 4,584,101
610 4,584,102
650 4,584,103
696 4,584,104
701 4,584,105
754 4,584,106
760 4,584,107
B1 4,352,740

CLASS 211

32 4,583,646
60.1 4,583,647
90 4,583,648
183 4,583,649

CLASS 215

206 4,583,650
228 4,583,651
256 4,583,652

CLASS 219

10.43 4,584,453
10.55 B 4,584,448
10.55 D 4,584,447
10.57 4,584,449
69 M 4,584,450
69 V 4,584,452
69 W 4,584,451
118 4,584,454
121 LH 4,584,455
121 LM 4,584,456
130.21 4,584,457
137.71 4,584,458
146.1 4,584,459
150 V 4,584,460
209 4,584,461
222 4,584,462
306 4,584,463
354 4,584,464
383 4,584,465
386 4,584,466
400 4,584,467

CLASS 220

300 4,583,653
307 4,583,654
346 4,583,655
359 4,583,656

CLASS 221

199 4,583,657
213 4,583,658
279 4,583,659

CLASS 222

1 4,583,660
42 4,583,661
43 4,583,662
61 4,583,663
4,583,664
83 4,583,665
109 4,583,666
142.6 4,583,667
529 4,583,668

CLASS 226

35 4,583,669

CLASS 227

19 4,583,670
144 4,583,671

CLASS 228

2.5 4,583,672
37 4,583,673
102 4,583,674
155 4,583,675
179 4,583,676

CLASS 229

15 4,583,677
39 R 4,583,678
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45 R 4,583,680
52 A 4,583,681

CLASS 235

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CLASS 236

46 R 4,583,682
49 4,583,683
78 D 4,583,684

CLASS 238

54 4,583,685

CLASS 239

35 4,583,686
112 4,583,691
118 4,583,687
314 4,583,688
381 4,583,689
405 4,583,692
657 4,583,693
690 4,583,690
4,583,694

CLASS 241

24 4,583,695

CLASS 242

7.03 4,583,696
55.1 4,583,697
56 R 4,583,698
84.42 4,583,699
86.51 4,583,700
107.4 A 4,583,701

CLASS 244

1 A 4,583,702
3.24 4,583,703
17.11 4,583,704

CLASS 248

174 4,583,705
251 4,583,706
293 4,583,707
447 4,583,708
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CLASS 250

213 VT 4,584,468
223 B 4,584,469
231 R 4,584,470
237 G 4,584,471
4,584,472
251 4,584,473
305 4,584,474
332 4,584,475
338 4,584,476
351 4,584,477
363 S 4,584,478
441.1 4,584,479
453.1 4,584,480
459.1 4,584,481
4,584,482
4,584,483
550 4,584,484
574 4,584,485

CLASS 251

129.10 4,583,710
129.15 4,583,709
149.6 4,583,711

CLASS 252

8.5 B 4,584,108
8.55 D 4,584,109
8.8 4,584,110
32.7 E 4,584,111
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45 4,584,113
47.5 4,584,114
49.6 4,584,115
51 4,584,116
51.5 A 4,584,117
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75 4,584,119
106 4,584,121
171 4,584,122
188.31 4,584,123
299.63 4,584,120
308 4,584,124
358 4,584,125
368 4,584,126
522 R 4,584,127
4,584,128
570 4,584,129

CLASS 254

89 R 4,583,712
126 4,583,713
326 4,583,71

CLASS 256

13.1 4,583,716
24 4,583,715

CLASS 260

112 B 4,584,130
239 A 4,584,132
239.3 B 4,584,131
239.3 P 4,584,134
245.2 R 4,584,133
351.6 4,584,135
397.5 4,584,136
4,584,137
404.5 4,584,138
409 4,584,139
412.8 4,584,140
420 4,584,141

CLASS 261

115 4,584,147

CLASS 264

2.1 4,584,148
5 4,584,149
24 B1 4,228,113
40.1 4,584,150
65 4,584,151
103 4,584,152
169 4,584,153
209.2 4,584,154
252 4,584,155
263 4,584,156
522 4,584,157
529 4,584,158

CLASS 266

44 4,583,717
48 4,583,718
72 4,583,719
81 4,583,720
220 4,583,721

CLASS 267

119 4,583,722
140.1 4,583,723

CLASS 269

88 4,583,724
328 4,583,725

CLASS 271

4 4,583,726
19 4,583,727
268 4,583,728
276 4,583,729

CLASS 272

76 4,583,730
144 4,583,731

CLASS 273

1.5 R 4,583,732
26 R 4,583,733
73 J 4,583,734
87.4 4,583,735
144 B 4,583,736
161 4,583,737
186 C 4,583,738
187 R 4,583,739
191 A 4,583,740
244 4,583,741
260 4,583,742
368 4,583,743
404 4,583,744
423 4,583,745

CLASS 277

1 4,583,746
3 4,583,747
81 R 4,583,748
152 4,583,749
168 4,583,750

CLASS 279

1 K 4,583,751

CLASS 280

6 R 4,583,752
33.99 A 4,583,753
246 4,583,754
281 R 4,583,755
432 4,583,756
628 4,583,757
644 4,583,758
673 4,583,759
766.1 4,583,760
781 4,583,761
801 4,583,762

CLASS 281

5 4,583,763
31 4,583,764

CLASS 282

9 R 4,583,765

CLASS 283

88 4,583,766

CLASS 285

40 4,583,767
41 4,583,768
73 4,583,769
177 4,583,770
230 4,583,771
347 4,583,772
382 4,583,773

CLASS 290

44 4,584,486

CLASS 292

19 4,583,774
64 4,583,775
346 4,583,776

CLASS 296

100 4,583,777

CLASS 297

56 4,583,778
184 4,583,779
4,583,780
284 4,583,781
440 4,583,782
452 4,583,783

CLASS 299

11 4,583,784
34 4,583,785
81 4,583,786

CLASS 301

58 4,583,787

CLASS 303

7 4,583,788
22 R 4,583,789
23 R 4,583,790

CLASS 305

27 4,583,791
42 4,583,792

CLASS 307

10 R 4,584,487
106 4,584,488
264 4,584,489
456 4,584,490
475 4,584,491
4,584,492
530 4,584,493
603 4,584,494

CLASS 308

6 C 4,583,793
10 4,583,794

CLASS 310

49 R 4,584,495
60 R 4,584,496
214 4,584,497
236 4,584,498
318 4,584,499

CLASS 312

209 4,583,795
214 4,583,796

CLASS 313

414 4,584,500
493 4,584,501

CLASS 315

64 4,584,502
370 4,584,503

CLASS 318

16 4,584,504
254 4,584,505
4,584,506
327 4,584,507
483 4,584,508
571 4,584,509
584 4,584,510
600 4,584,511
696 4,584,512
701 4,584,513

CLASS 320

33 4,584,514

CLASS 322

28 4,584,515
99 4,584,516

CLASS 323

222 4,584,517
224 4,584,518
245 4,584,519
316 4,584,520

CLASS 324

54 4,584,521
61 R 4,584,522
73 R 4,584,524
96 4,584,523
126 4,584,525
133 4,584,526
157 4,584,527
166 4,584,528
261 4,584,529
425 4,584,530
464 4,584,531

CLASS 328

151 4,584,532

CLASS 329

50 4,584,533
122 4,584,534

CLASS 330

257 4,584,535
295 4,584,536

CLASS 331

1 A 4,584,537
4,584,538
16 4,584,539

CLASS 332

9 R 4,584,540
16 R 4,584,541
16 T 4,584,542

CLASS 333

103 4,584,543
174 4,584,544

CLASS 335

41 4,584,545
186 4,584,546
216 4,584,547
299 4,584,548
301 4,584,549

CLASS 336

10 4,584,550
61 4,584,551

CLASS 338

32 H 4,584,552
320 4,584,553

CLASS 339

6 R 4,583,797
8 P 4,583,798
14 R 4,583,799
17 C 4,583,801
17 F 4,583,800
20 4,583,802
45 M 4,583,803
60 M 4,583,804
61 R 4,583,805
75 MP 4,583,806
91 R 4,583,813
125 R 4,583,807
126 R 4,583,808

143 R 4,583,809
147 R 4,583,810
177 R 4,583,811
259 R 4,583,812

CLASS 340

59 4,584,554
71 4,584,555
146.2 4,584,556
347 AD 4,584,557
4,584,558
4,584,560
4,584,565
4,584,566
347 DA 4,584,561
4,584,563
4,584,564
4,584,568
347 DD 4,584,562
4,584,567
347 SH 4,584,559
566 4,584,569
568 4,584,570
572 4,584,571
703 4,584,572
734 4,584,573
744 4,584,574
825.38 4,584,576
825.5 4,584,575
870.32 4,584,577

CLASS 343

5 R 4,584,578
17.1 R 4,584,579
18 E 4,584,580
373 4,584,581
4,584,582
380 4,584,583
451 4,584,584
702 4,584,585
742 4,584,586
745 4,584,587
786 4,584,588
882 4,584,589

CLASS 346

140 R 4,584,590
4,584,591
159 4,584,592

CLASS 350

1.2 4,583,814
1.6 4,583,815
3.71 4,583,816
96.14 4,583,817
96.19 4,583,818
4,583,820
96.21 4,583,819
96.34 4,583,821
164 4,583,822
255 4,583,823
267 4,583,824
335 4,583,825
350 R 4,583,826
429 4,583,827
552 4,583,828
609 4,583,829

CLASS 351

212 4,583,830

CLASS 354

106 4,583,831

CLASS 355

3 DD 4,583,832
4,583,841
4,583,842
4,583,843
3 SH 4,583,844
9 4,583,833
14 C 4,583,834
14 CH 4,583,835
4,583,836
14 R 4,583,839
30 4,583,840
46 4,583,845
52 4,583,846
53 4,583,847
67 4,583,848
75 4,583,837
88 4,583,849
91 4,583,850
102 4,583,838

CLASS 356

73.1 4,583,851
152 4,583,852
4,583,862
237 4,583,854
323 4,583,853
351 4,583,855
358 4,583,856
375 4,583,857
402 4,583,858
438 4,583,859
446 4,583,860
4,583,861

CLASS 357

15 4,584,594
23.4 4,584,593
41 4,584,595

CLASS 358

10 4,584,596
13 4,584,597
29 4,584,598
36 4,584,599
40 4,584,600
80 4,584,601
84 4,584,602
86 4,584,603
92 4,584,604
107 4,584,605
209 4,584,606
4,584,607
212 4,584,608
213 4,584,609
228 4,584,610
285 4,584,612
293 4,584,611
310 4,584,613
312 4,584,614
332 4,584,615

CLASS 360

48 4,584,616
49 4,584,617
70 4,584,618
75 4,584,619
128 4,584,620

CLASS 361

3 4,584,621
56 4,584,622
90 4,584,623
119 4,584,624
283 4,584,625
293 4,584,626
306 4,584,627
309 4,584,628
321 4,584,629
433 4,584,630

CLASS 362

61 4,584,631
133 4,584,632
253 4,584,633
275 4,584,634

CLASS 363

25 4,584,635
54 4,584,636
61 4,584,637

CLASS 364

136 4,584,638
200 4,584,639
4,584,640
4,584,641
4,584,642
4,584,643
4,584,644
431.11 4,584,645
449 4,584,646
464 4,584,647
4,584,648
475 4,584,649
481 4,584,650
483 4,584,651
484 4,584,652
491 4,584,653
550 4,584,654
4,584,655
569 4,584,656
602 4,584,657
721 4,584,658
724 4,584,659
786 4,584,660
787 4,584,661
802 4,584,662
900 4,584,663
4,584,664
4,584,665
4,584,666
4,584,667

CLASS 365

36 4,584,668
95 4,584,669
149 4,584,670
154 4,584,671
203 4,584,672
219 4,584,673
230 4,584,674

CLASS 366

149 4,583,863

CLASS 367

81 4,584,675
108 4,584,676

CLASS 368

17 4,583,864
46 4,583,865
232 4,583,866

CLASS 370

15 4,584,677
85 4,584,678
94 4,584,679
96 4,584,680

CLASS 371

10 4,584,681
4,584,682
25 4,584,683
33 4,584,684
35 4,584,685
37 4,584,686

CLASS 372

29 4,584,687
36 4,584,688
55 4,584,689

CLASS 374

113 4,583,867
114 4,583,868
122 4,583,869

CLASS 375

18 4,584,690
22 4,584,691
38 4,584,692
54 4,584,693
75 4,584,694
81 4,584,695
99 4,584,696

CLASS 376

107 4,584,159
141 4,584,160
143 4,584,161
204 4,584,162
205 4,584,163
216 4,584,164
4,584,165
4,584,166
267 4,584,167
353 4,584,168

CLASS 377

60 4,584,697
110 4,584,698

CLASS 378

130 4,584,699

CLASS 381

Re.32,124
4,584,700
63 4,584,701
71 4,584,702

CLASS 382

50 4,584,703
65 4,584,704

CLASS 383

8 4,584,705
37 4,584,706

CLASS 384

114 4,583,870

CLASS 400

4,583,871
625 4,583,872
629 4,583,873

CLASS 401

85 4,583,874
133 4,583,875
197 4,583,876

CLASS 402

75 4,583,877

CLASS 403

402 4,583,878

CLASS 404

73 4,583,879

CLASS 405

4,583,880
198 4,583,881
217 4,583,882
227 Re.32,119

CLASS 406

14 B1 3,976,332
65 4,583,883
73 4,583,884
168 4,583,885

CLASS 407

40 4,583,886
116 4,583,887

CLASS 408

59 4,583,888
115 R 4,583,889
239 A 4,583,890

CLASS 409

120 4,583,891
136 4,583,892
138 4,583,893.
233 4,583,894
295 4,583,895

CLASS 410

69 4,583,896

CLASS 411

378 4,583,897
387 4,583,898

CLASS 413

53 4,583,899

CLASS 414

24.5 4,583,900
144 4,583,901
261 4,583,902
311 4,583,903
453 4,583,904
505 4,583,905
686 4,583,906
694 4,583,908
718 4,583,907
749 4,583,909
752 4,583,910

CLASS 415

116 4,583,911
119 4,583,912
196 4,583,913

CLASS 416

204 A 4,583,914

CLASS 417

26 4,583,915
36 4,583,916
63 4,583,917
108 4,583,918
228 4,583,919
266 4,583,920
269 4,583,921
4,583,922
4,583,923
414 4,583,924
420 4,583,925
555 R

CLASS 418

137 4,583,926
150 4,583,927

CLASS 419

3 4,584,169
5 4,584,170
8 4,584,171
34 4,584,172

CLASS 420

533 4,584,173
555 4,584,174

CLASS 422

9 4,584,175
41 4,584,176
115 4,584,177
140 4,584,178
187 4,584,179
207 4,584,180
241 4,584,181
310 4,584,182

CLASS 423

2 4,584,183
15 4,584,184
49 4,584,185

CLASS 424

1.1 4,584,186
4,584,187
19 4,584,188
54 4,584,189
59 4,584,190
70 4,584,191
4,584,196
81 4,584,192
84 4,584,193
89 4,584,194
92 4,584,195
95 4,584,197
195.1 4,584,198

CLASS 425

13 4,583,928
71 4,583,929
148 4,583,930
149 4,583,931
182 4,583,932
330 4,583,933
376 R 4,583,934
384 4,583,935

CLASS 426

36 4,584,199
69 4,584,200
106 4,584,201
111 4,584,202
549 4,584,203
643 4,584,204

CLASS 427

93 4,584,205
109 4,584,206
124 4,584,207
160 4,584,208
201 4,584,209
204 4,584,210
320 4,584,211

CLASS 428

13 4,584,212
23 4,584,213
35 4,584,214
36 4,584,215
38 4,584,216
40 4,584,217
4,584,218
42 4,584,219
4,584,220
44 4,584,221
57 4,584,222
58 4,584,223
60 4,584,224
71 4,584,225
105 4,584,226
113 4,584,227
182 4,584,228
216 4,584,229
218 4,584,230
220 4,584,231
247 4,584,232
290 4,584,233
323 4,584,234
333 4,584,235
4,584,236
336 4,584,237
349 4,584,238
4,584,239
373 4,584,240
379 4,584,241
403 4,584,242
4,584,243
407 4,584,244
409 4,584,245
522 4,584,246
592 4,584,247
656 Re.32,121

CLASS 429

54 4,584,248
57 4,584,249
97 4,584,250
191 4,584,251
209 4,584,252

CLASS 430

59 4,584,253
108 4,584,254
139 4,584,255
159 4,584,256
219 4,584,257
270 4,584,258
273 4,584,259
288 4,584,260
294 4,584,261
533 4,584,262
4,584,263
542 4,584,264
551 4,584,265
555 4,584,266
619 4,584,267

CLASS 431

1 4,583,936
76 4,583,937
79 4,583,938
253 4,583,939
269 4,583,940
347 4,583,941

CLASS 432

14 4,583,943
58 4,583,942

CLASS 433

22 4,583,944
116 4,583,945
136 4,583,946
171 4,583,947
181 4,583,948
185 4,583,949

CLASS 434

22 4,583,950
178 4,583,951
191 4,583,952

CLASS 435

7 4,584,268
108 4,584,269
128 4,584,270
167 4,584,271
194 4,584,272
232 4,584,273
253 4,584,274
290 4,584,275

CLASS 436

150 4,584,276
501 4,584,277
542 4,584,278

CLASS 440

52 4,583,953

CLASS 445

7 4,583,954

CLASS 446

73 4,583,955
119 4,583,956
177 4,583,957
308 4,583,958

CLASS 455

41 4,584,707
45 4,584,708
78 4,584,709
226 4,584,710
4,584,711
273 4,584,712
277 4,584,713
297 4,584,714
302 4,584,715
318 4,584,716
345 4,584,717
351 4,584,718
608 4,584,719
4,584,720

CLASS 464

68 4,583,959
134 4,583,960

CLASS 474

113 4,583,961
133 4,583,962
205 4,583,963

CLASS 493

308 4,583,964
313 4,583,965
374 4,583,966

CLASS 501

78 4,584,279
80 4,584,280
85 4,584,281
136 4,584,282

CLASS 502

31 4,584,283
62 4,584,286
65 4,584,287

CLASS 514

18 4,584,284
19 4,584,285
86 4,584,295
147 4,584,296
172 4,584,288
182 4,584,289
206 4,584,290
210 4,584,291
211 4,584,292
213 4,584,293
214 4,584,294
225 4,584,300
226 4,584,297
242 4,584,298
252 4,584,299
316 4,584,301
324 4,584,302
326 4,584,303
351 4,584,304
368 4,584,305
369 4,584,306
383 4,584,307
4,584,308
4,584,309
397 4,584,310
399 4,584,311
411 4,584,312
424 4,584,313
450 4,584,314
456 4,584,315
492 4,584,316
493 4,584,317
546 4,584,318
547 4,584,319
560 4,584,320
722 4,584,321

CLASS 518

700 4,584,322
4,584,323

CLASSIFICATION OF PATENTS

CLASS 521

88 4,584,324
99 4,584,325

CLASS 523

112 4,584,326
130 4,584,327
145 4,584,328
4,584,329
513 4,584,330

CLASS 524

122 4,584,332
127 4,584,333
151 4,584,334
443 4,584,336
500 4,584,337
504 4,584,338
516 4,584,339
596 4,584,340
837 4,584,341
860 4,584,342

CLASS 525

54.21 4,584,357
60 4,584,343
66 4,584,344
67 4,584,345
98 4,584,346
119 4,584,347
177 4,584,335
207 4,584,348
227 4,584,349
232 4,584,350
344 4,584,351
410 4,584,352
438 4,584,353
454 4,584,354
477 4,584,355
479 4,584,356

CLASS 526

240 4,584,358
241 4,584,359

CLASS 528

14 4,584,360
15 4,584,361
55 4,584,362
73 4,584,363
128 4,584,364
271 4,584,365
502 4,584,366

CLASS 529

119 4,584,331

CLASS 534

634 4,584,367

CLASS 536

4.1 4,584,368
54 4,584,369
87 4,584,370

CLASS 544

16 4,584,371
225 4,584,373
230 4,584,372
247 4,584,374
258 4,584,375
316 4,584,376

CLASS 546

15 4,584,377
124 4,584,378
147 4,584,379
250 4,584,380
278 4,584,383
281 4,584,384
312 4,584,381
314 4,584,382

CLASS 548

225 4,584,385
237 4,584,386
324 4,584,387

CLASS 549

241 4,584,388
292 4,584,389
464 4,584,391
526 4,584,390

CLASS 556

137 4,584,392
407 4,584,393
442 4,584,394
479 4,584,395

CLASS 558

156 4,584,146
240 4,584,143
250 4,584,144
264 4,584,142
406 4,584,145

CLASS 560

63 4,584,396
75 4,584,397

CLASS 562

439 4,584,398
443 4,584,399
4,584,400

CLASS 564

153 4,584,401
154 4,584,402
255 4,584,403
347 4,584,404
479 4,584,405
4,584,406
487 4,584,407

CLASS 568

48 4,584,408
308 Re.32,122
420 4,584,409
436 4,584,410
451 4,584,411
473 4,584,412
576 4,584,413
617 4,584,414
697 4,584,415
727 4,584,416
799 4,584,417
855 4,584,418
864 4,584,419

CLASS 570

227 4,584,420

CLASS 585

241 4,584,421
467 4,584,422
481 4,584,423
827 4,584,425
828 4,584,424

CLASS 604

9 4,583,967
43 4,583,968
49 4,583,969
74 4,583,970
80 4,583,981
82 4,583,971
133 4,583,972
135 4,583,973
174 4,583,976
4,583,977
208 4,583,978
211 4,583,974
253 4,583,975
256 4,583,979
310 4,583,982
329 4,583,983
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		283,470	17	:	283,461	33	:	283,503			283,529
		283,483			283,475	34	:	283,474			283,546
		283,497			283,533			283,487			283,550
		283,507			283,539			283,490	39	:	283,499
		283,520	21	:	283,465			283,519			283,502

		283,513			283,544						
		283,517			283,551						
		283,523	44	:	283,478						
		283,524			283,481						
		283,526	48	:	283,488						
		283,527			283,489						
		283,528			283,536						
40	:	283,464	49	:	283,471						
		283,494	53	:	283,530						
41	:	283,532	55	:	283,540						
42	:	283,504			283,545						

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06	:	5,722			5,724	12	:	5,727	36	:	5,723

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